MINI DISC RECORDER

DM-1001/B9

SERVICE MANUAL

KENWOOD

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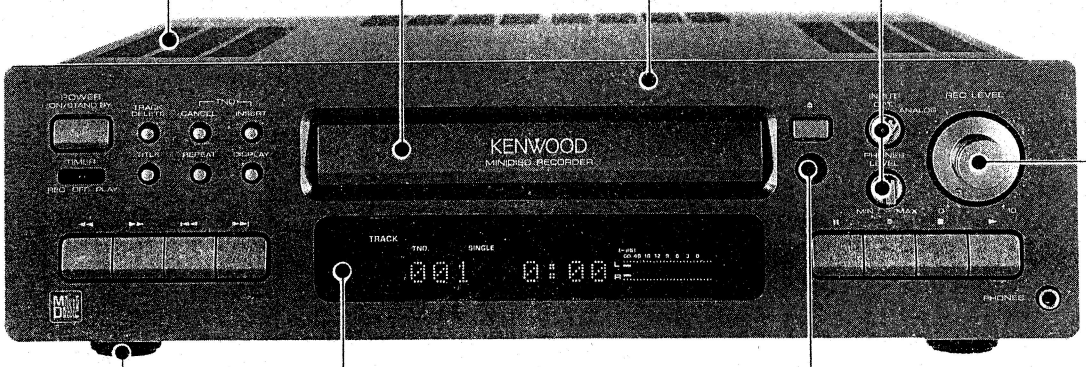
B51-4879-00(O) 3569



Metallic cabinet (A01-3096-11)

Panel ass'y (Tray) (A29-0361-04)

Panel ass'y (Front) (A60-0463-12)

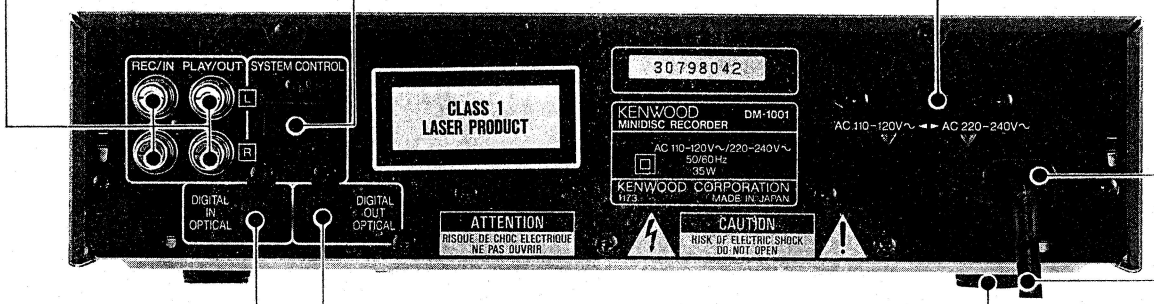
Knob (Input, Phones level) (K29-5786-04)

Foot (Front) (J02-0130-05)

Front glass (B10-1993-04)

Color filter (B11-0269-04)

Knob (REC level) (K29-5757-04)



Phono jack (Analog I/O) (E63-0107-05)

Rectangular receptacle (S.cont) (E08-0311-05)

Slide switch (Voltage selector)* (S62-0001-05)

Power cord bushing (J42-0083-05)

Optic receiving module (Opt in) (W02-1181-05)

Oscillating module (Opt out) (W02-1114-05)

Foot (Rear) (J02-0127-05)

AC power cord (E30-)*

In compliance with Federal Regulations, following are reproductions of labels on, or inside the product relating to laser product safety.

KENWOOD-Corp. certifies this equipment conforms to DHHS Regulations No. 21 CFR 1040. 10, Chapter 1, Subchapter J.

DANGER : Laser radiation when open and interlock defeated. AVOID DIRECT EXPOSURE TO BEAM.

Photo is DM-1001.

***Refer to parts list on page 65.**

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SPECIFICATIONS ..... BACK COVER

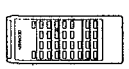
ACCESSORIES

- Audio cord
  (E30-2600-05 : DM-1001)
  (E30-0615-05 : DM-B9)

- System control cord
  (E30-2628-05)

- Optical fiber cable
  (B19-1529-05)

- Remote control unit (RC-DMB9)
  (A70-0938-05)

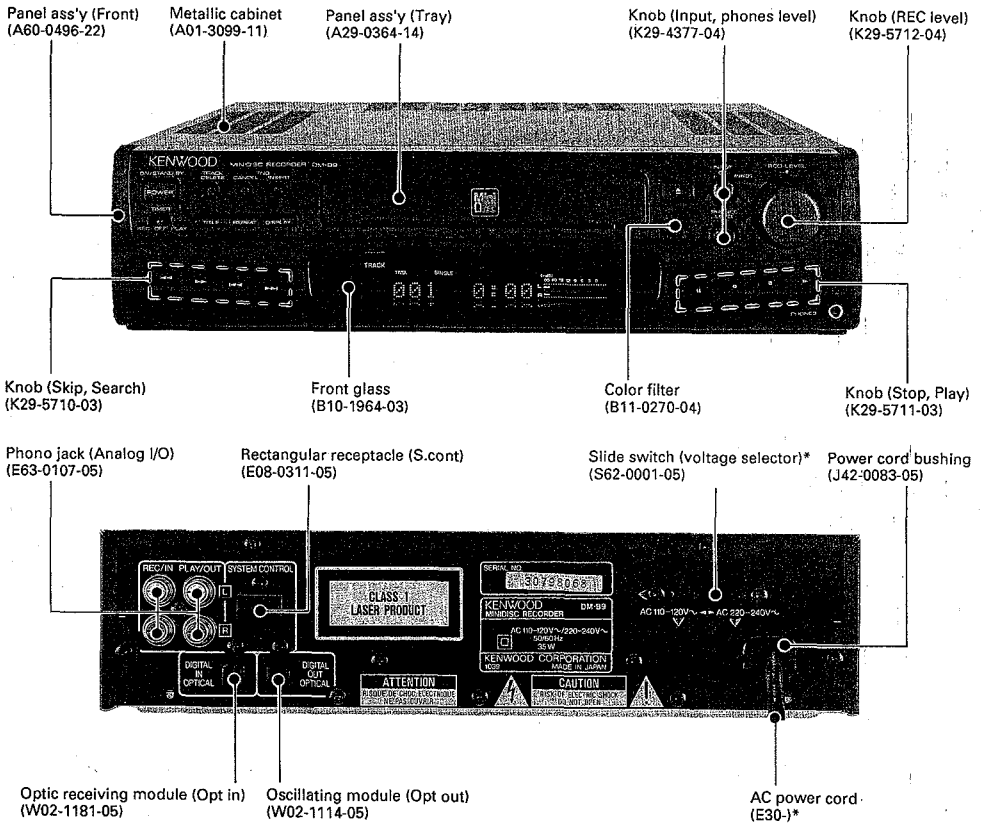


Battery cover (A09-0160-08)

- Battery
  (–)

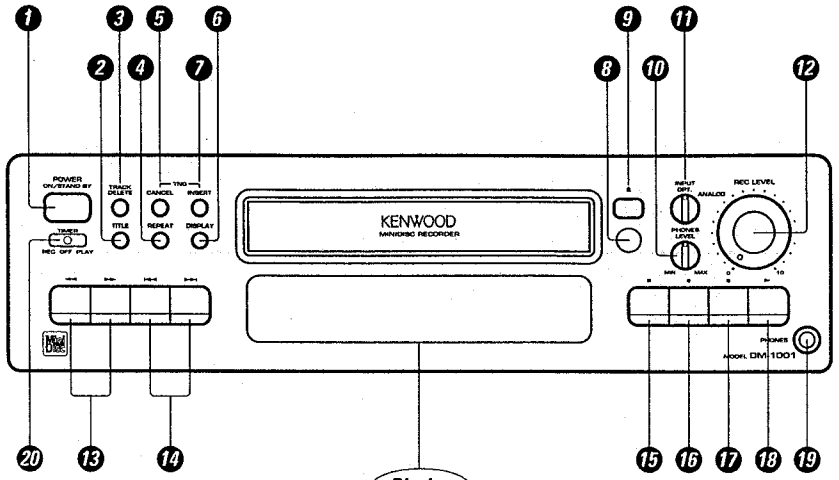
- AC plug adaptor : Mtype only
  (E03-0115-05)

EXTERNAL VIEW : DM-B9



*Refer to parts list on page 65.

CONTROL



❶ POWER key

❷ TITLE key
Assigns a title to a disc or music track.

❸ TRACK DELETE key
Deletes a track.

❹ REPEAT key
Activates repeated playback.

❺ TNO CANCEL key
Cancels a track number.

❻ DISPLAY key
Each press changes the display content.

❼ TNO INSERT key
Adds a track number.

❽ Remote sensor

❾ Tray open/close key

❿ PHONES LEVEL control
Adjusts the sound level of headphones.

⓫ INPUT selector
Switches the input between Analog and Optical (digital).

⓬ REC LEVEL control
Adjusts the recording level.

⓭ Search keys
Fast forward or fast reverse the music.

⓮ Skip keys
Locates the beginning of a track.

⓯ Pause key

⓰ Record key
Press to start recording.

⓱ Stop key

⓲ Play key

⓳ PHONES jack
Plug headphones (with stereo mini-plug) into this jack.

⓴ TIMER switch
Used for timer-activated recording or playback using a timer available in audio stores.

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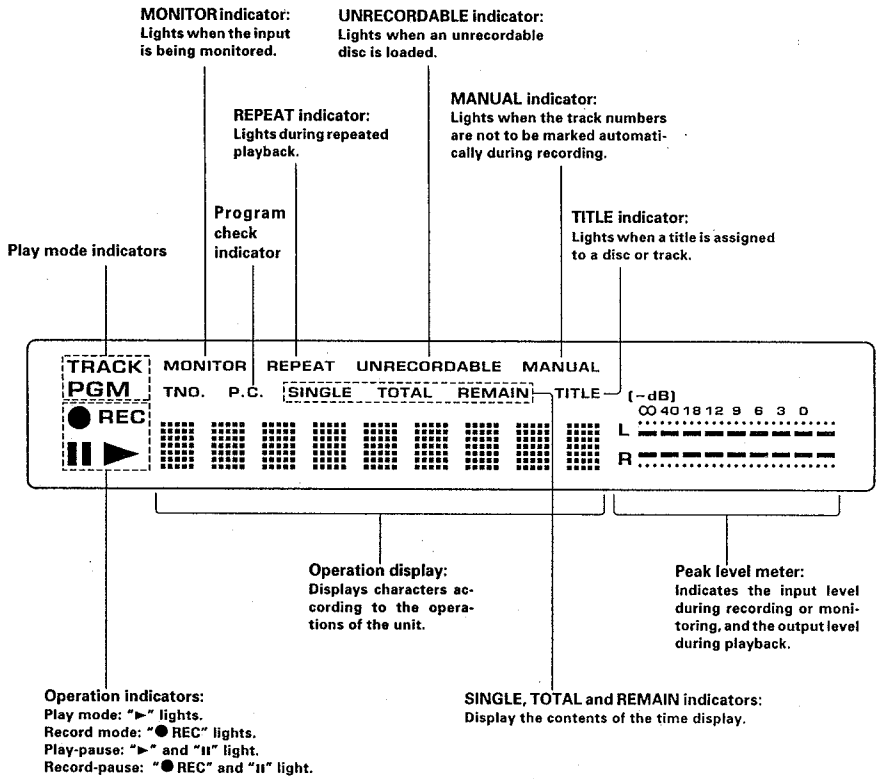
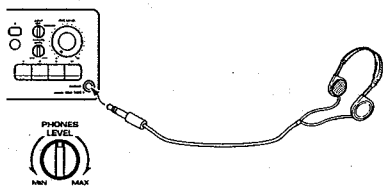
CONTROL



Listening through headphones

Plug the stereo headphones (with mini-plug) available in audio stores into the PHONES jack and adjust the listening volume with the PHONES LEVEL control on the front panel.



STAND BY mode of POWER switch

When the power cord is plugged into an AC outlet, "STANDBY" is displayed while the power is set to OFF. This is because, even when the power is set to OFF, a small amount of power is supplied to the system. This status is called the standby mode of the system. When "STANDBY" is displayed, the power can also be turned ON/OFF from the remote control unit.

Display

STANDBY

REMOTE CONTROL OPERATION

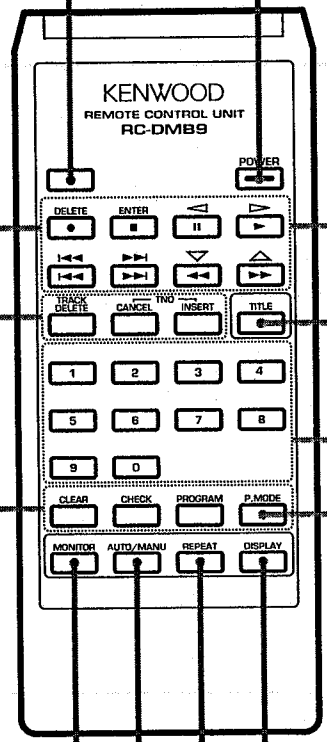
▲ key
Press to open or close the disc tray.

POWER key
Press to turn the power ON and press again to activate the STAND BY mode.

Title operation keys (in blue letters)

These keys are used as the title operation keys in the title entry mode.
DELETE key:
Deletes the character above the cursor. (Each press shifts the character position by one column toward the left.)
ENTER key:
Enters the title in memory.
▷ key:
Shift the cursor toward the right.
◁ key:
Shift the cursor toward the left.
|◀◀, ▶▶| keys:
Changes the track number to which the title is assigned.
△, ▽ keys:
Selects an alphabet character, etc.

Operation keys
● Record key:
Press to start recording.
❚❚ Pause key:
Press to pause recording or playback temporarily.
■ Stop key:
Press to stop recording or playback.
▶ Play key:
Press to start playback.
|◀◀, ▶▶| Skip keys:
Press to skip tracks.
◀◀, ▶▶ Search keys:
Press to move the position being played in a track at a high speed in the forward or reverse direction.



Editing operation keys
TRACK DELETE key:
Deletes a track.
TNO CANCEL key:
Cancels a track number.
TNO INSERT key:
Inserts a track number.

TITLE key
Press to activate the title entry mode.

Numeric keys
In the TRACK or PROGRAM play mode, press to specify the desired track number.

Programming keys
PROGRAM key:
Enters the specified track number in the program.
CHECK key:
Checks the program contents.
CLEAR key:
Clears the program.

P.MODE (Play mode) key
Press to activate the PROGRAM mode and press again to activate the TRACK mode.

MONITOR key
Outputs the signal of the source selected with the input selector keys.

DISPLAY key
Each press changes the display contents.

AUTO/MANUAL key
Selects whether the track numbers are to be marked automatically during recording (AUTO) or to be marked manually after it (MANUAL).

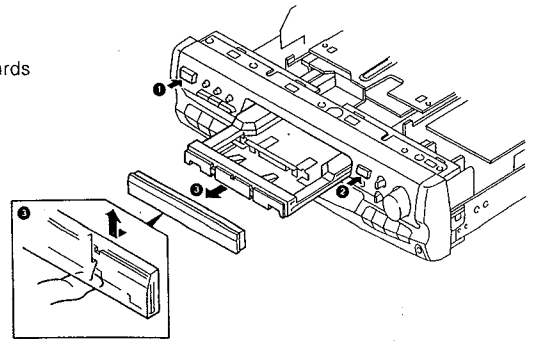
REPEAT key
Press to activate repeated playback.

Model: RC-DM89
Infrared ray system

DISASSEMBLY FOR REPAIR

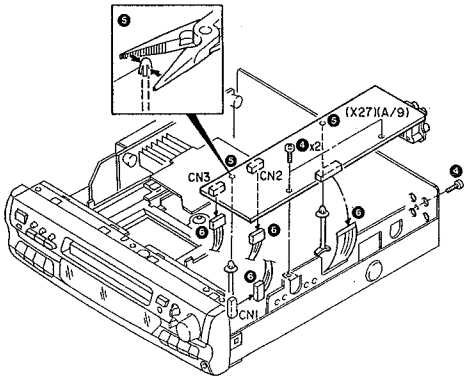
Removing the Tray Panel

1. Push power switch to ON (❶).
2. Push open switch and slide the tray outwards (❷).
3. Remove the tray panel (❸).



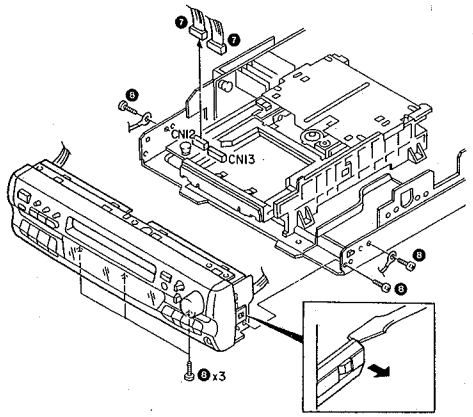
Removing the PCB (X27- A/9)

4. Remove the three screws (❹).
5. Remove the PCB from two unit holders (❺).
6. Disconnect the three connectors and one flexible cable (❻).



Removing the Front Panel

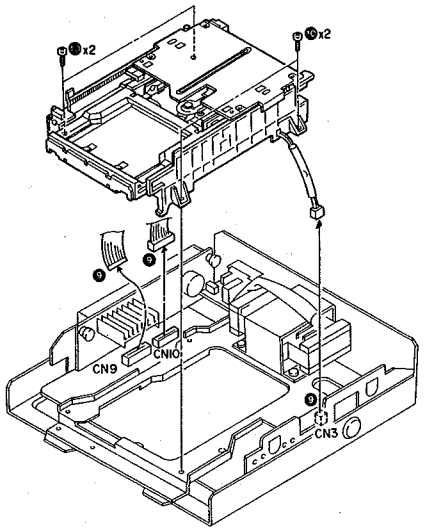
7. Disconnect the two connectors (❼).
8. Remove the six screws, then remove the front panel (❽).



DISASSEMBLY FOR REPAIR

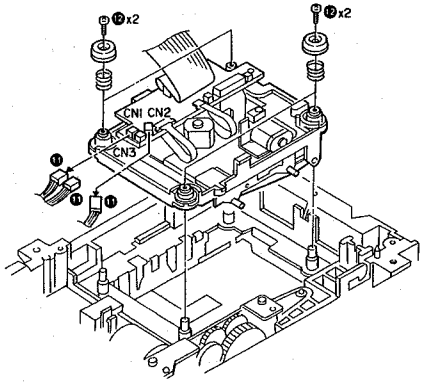
Removing the Mechanism Ass'y

9. Disconnect the two connectors and one flexible cable (❾).
10. Remove four screws (❿), then remove the mechanism ass'y.



Removing the Pickup and Record Head

11. Disconnect the three connectors (⓫).
12. Remove the four screws (⓬).



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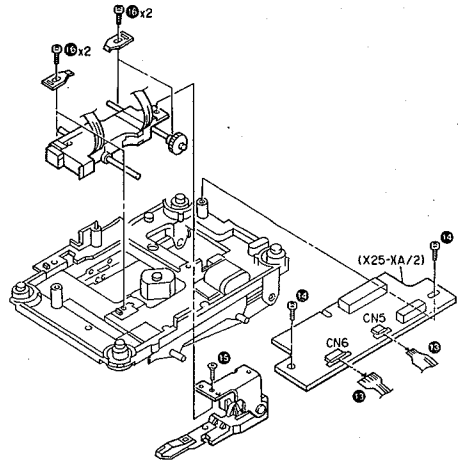
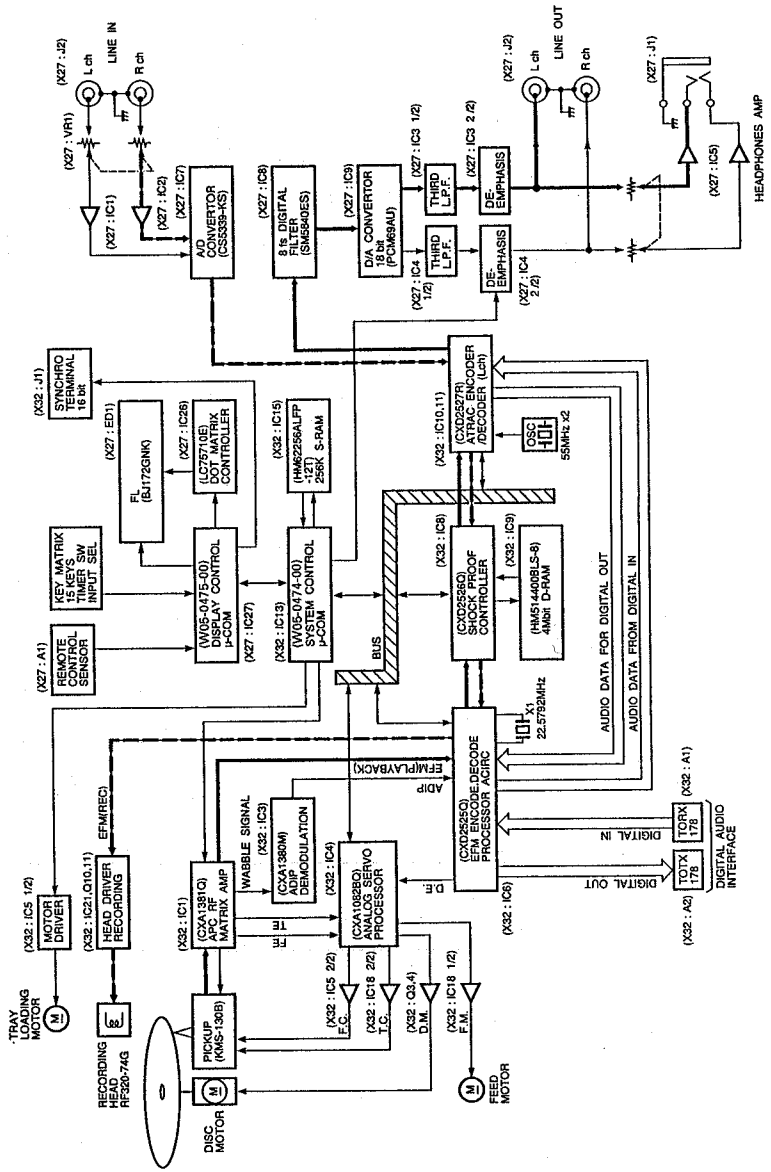
DISASSEMBLY FOR REPAIR

13. Disconnect the two flexible cords (⓭).
14. Remove the two screws (⓮), then remove the PCB (X25 A/2).
15. Remove the one screw (⓯), then remove the record head.
16. Remove the four screws (⓰), then remove the pickup.



BLOCK DIAGRAM



CIRCUIT DESCRIPTION

1. Description of Components

1-1. Electric unit (X25-5450-10)

Ref No.	Semi name	Use and function	Operation
Q1	UN4116	Power supply for addition circuit	Stepping down : Output (Emitter) voltage → 10/11 Vcc - 0.6
Q2	2SD1963 (R, S)	Addition circuit ON/OFF	Addition circuit is turned on when Q2 is turned on.
Q3	2SB1308 (Q, R)	Laser driver	Control of laser power supply
D1	DA204U	Temperature sensor	Two units of silicone diode VF2 are supplied.

1-2. Power supply unit (X27-1660-XX) DM-B9 : -00, -21 / DM-1001 : -01, -22

Ref No.	Semi name	Use and function	Operation
IC1	NJM4565M	(1/2) Op-amp for shifting analog input level (Lch)	(1/2) For removing noises which are generated in the A/D convertor and unrelated to the input analog signal, this unit follows up voltage of the voltage source to offset the input analog signal for the A/D convertor and works as the reference voltage source.
		(2/2) Input buffer amp (Lch)	(2/2) Buffer to input analog signal
IC2	NJM4565M	(1/2) Op-amp for shifting analog input level (Rch)	(1/2) (2/2) Have same function as IC1.
		(2/2) Input buffer amp (Rch)	
IC3	NJM4565M	(1/2) Op-amp for I/V conversion of Rch	(1/2) Converts output current of D/A convertor into voltage. Output current : 1.2mA, Output after conversion : 4.3Vp-p max.
		(2/2) Op-amp for low-pass filter of Rch and output buffer	(2/2) Reduces noises out of audible range.
IC4	NJM4565M	(1/2) Op-amp for I/V conversion of Lch	(1/2) (2/2) Have same function as IC3.
		(2/2) Op-amp for low-pass filter of Lch and output buffer	
IC5	NJM4565M	(1/2) Op-amp for headphone output buffer of Rch	Receives analog signals after they pass IC3 and IC4. in non-inverted input mode, and outputs with the gain of about 1.
		(2/2) Op-amp for headphone output buffer of Lch	
IC6	NJM4558M	Operation error amp for ±5V constant voltage power supply	
IC7	AK5339-VS CS5339-KS	A/D convertor	Converts analog input into digital data. Master clock is 256fs (11.2896MHz), and output data is arranged closed to forward end with MSB first.
IC8	SM5840ES	Digital filter	
IC9	PCM69AU	D/A convertor	Converts audio data 8-time over-sampled and re-written in 18 bits by IC8 into analog signals.
IC10	TC7S04F	Inverter	Inverts phase of audio data received from X32.
IC12	LM2940CT-5.0	3 terminal regulator	Connect 8V to 5V
IC13	TA79005S μPC7905HF	3 terminal regulator	Connect –8V to –5V
IC26	LC75710E	Dot matrix convertor	Control driver for 5x7 dot matrix VFD display
IC27	W05-0475-00	μ-com	

CIRCUIT DESCRIPTION

Ref No.	Semi name	Use and function	Operation
Q1 ~ Q4	2SC2878 (B)	Transistor for muting	Base "H" : Mute, "L" : Mute OFF (Q1 and Q3 : Lch, Q2 and Q4 Rch) Q1, Q2 : Analog output, Q3, Q4 : Headphone output
Q5, Q6	DTC113ZS, UN4219	Control transistor for muting analog output	* Muting made by control signal to base Q5 L, Q6 L → ON Q5 L, Q6 H → ON Q5 H, Q6 L → ON Q5 H, Q6 H → OFF
Q7, 8	DTC113ZS, UN4219	Transistor for controlling transistor for muting headphone output MUTE	Q7 L, Q8 L → ON Q7 L, Q8 H → ON Q7 H, Q8 L → ON Q7 H, Q8 H → OFF
Q9	2SD2012, 2SD2061	Transistor for controlling +5V constant voltage circuit	Supplies power to IC1 ~ IC5, IC7 and IC9.
Q10	2SB1370, 2SB1375	Transistor for controlling –5V constant voltage circuit	Supplies power to IC1 ~ IC5, IC7.
Q11	DTA124EV, UN5112	Switch	
Q12	2SC4081 (R, S)	Switch	
D1 ~ D4	U1BC44	Rectification	Rectifies AC power.
D7	DTZ5.1 (B)	Constant voltage	For reference voltage of +5V constant voltage circuit.
D8 ~ D11	DTZ8.2 (B)	Constant voltage for level shift	
D12	U1BC44	Rectification for level shift	Reduces VCE of Q10.
D13	DA204U	For protection from static erectricityand line noise	
D41, D42	DA204U	Limiter	For serial communication port.
D43, D44	MA110	Prevention of inverse current	For serial communication port.
D45 ~ D48	MA110	Prevention of inverse current	Countermeasure against double push of key.
D49	DA204U	Diode clamp	Clamp against chassis
D50	MA110	Clamp	Clamp of convertor voltage of IC26 reset signal.
D51	MA110	Switch	CE signal input.

1-3. Processor unit (X32-2540-11)

Ref No.	Semi name	Use and function	Operation
IC1	CXA1381Q	RF matrix amp	• RF signal processing (Equalizer, EFM comparator), •Servo signal processing (AGC, FE · TE amplifier, etc.), • APC · ADIP amplifier
IC2	TC74HC4053AF	Analog switch	FE/TE DEFECT switch and time constant change-over switch of AGC
IC3	CXA1380M	ADIP demodulator	Protection of ADIP demodulator from defect and generation of data clock
IC4	CXA1082BQ	Servo signal processor	• Focus, Tracking, Feed servo control • Disc servo L.P.F. drive amplifier
IC5	TA8410AK	Drive amplifier	(1/2) Tray loading motor driver, (2/2) Focus coil driver
IC6	CXD2525Q	EFM/ACIRC encoder, decoder	EFM/ACIRC encode, decode ADIP decode, EFM/ADIP CLV control
IC7	S-80740AL-A4	Op-amp	Phase compensation amplifier for digital in PLL
IC8	CXD2526Q	Memory controller	Shock-proof · memory controller, MD format signal Encode/Decode, Main data C2PO sub-data control

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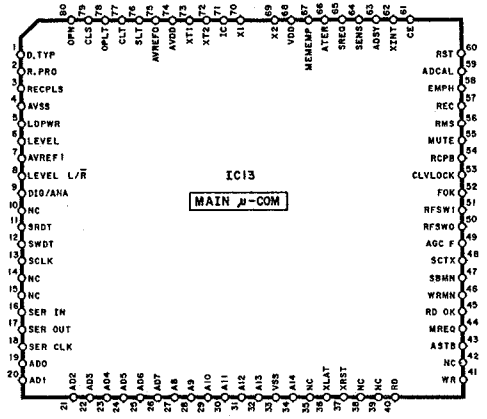
CIRCUIT DESCRIPTION

Ref No.	Semi name	Use and function	Operation
IC9	HM514400BLS-8	4-Mbit D-RAM	Shock-proof · memory
IC10, IC11	CXD2527R	ATRAC encoder/decoder	ATRAC (IC10: Lch, IC11 : Rch) processing (Compression and expansion of audio signal range)
IC12	TC74HC4053AF	Analog switch	PIT GROOVE change-over switch of T.BAL and TOFST Disc motor drive muting switch.
IC13	W05-0474-00	Main µ-com	
IC14	TC74HC14AF	Inverter	XLAT · SWDT · SCLK buffer
IC15	HM62256ALFP-12T	256k bit S-RAM	TOC · UTOC backup memory
IC16	TC74HC373AF	8 bit latch	S-RAM address latch
IC17	PST529F	Reset	Monitoring of source voltage of main µ-com
IC18	TA8410AK	Drive amp	(1/2) Feed motor driver, (2/2) Tracking coil driver
IC19	M62005L	Reset	Monitoring of source voltage of sub µ-com
IC20	TL431CLP	Power control	REC head drive power control
IC21	TC74HC02AF	NOR gate	REC EFM switch
Q1	DTA124ES, UN4112	Switch	Focus bias mute when disc stop.
Q2	DTC124ES, UN4212		
Q3, Q4	2SD882, 2SB772	Driver	Disc motor driver
Q5	2SC1923 (R, O)	Oscillator	VCO for digital in PLL
Q6	2SC3246	Driver	Relay solenoid drive
Q7	2SD2012	Emitter follower	+5V power supply for sub µ-com
Q8	2SB1375	Emitter follower	–30V power supply for FL
Q9	2SC2458 (Y, GR) 2SC3311A (Q, R)	Emitter follower	+6.2V power supply for IC21
Q10, Q11	IRF610	Driver	REC head driver
Q12	2SD1944	Emitter follower	+4V power supply for recording head drive
Q13	2SK163 (L)	Constant current power supply	+5V reference voltage for sub µ-com
Q14	DTC124ES, UN4212	Switch	Power switch for main µ-com
Q15	2SA1534A (R, S)		
Q16, Q17	2SK208 (Y, GR)	Digital in PLL	L.P.F.
Q18	2SA1036K (Q, R)	Digital in PLL	L.P.F.
D2	MA110	Switch	Prevents malfunction of EFM asymmetry circuit when focus is turned off.
D3	MA110	Limiter	Converts ±5V defect signal into 0V ~ +5V signal.
D4	MA110	Switch	Prevents defect operation when disc stops.
D5	1SV147	VCO control	Control of VCO oscillation frequency for digital in PLL
D6, D7	MA110	Clamp	Clamp between system control signal GND and chassis GND
D8	MA113	Clamp	Clamp of counter voltage of relay drive solenoid
D9	U1BC44	Rectification	+5V power supply for sub µ-com
D10	DTZ5.1 (B)	Reference voltage	+5V reference voltage for sub µ-com power supply
D12	U1BC44	Prevention of inverse current	Backup protection for sub µ-com power supply
D14	U1BC44	Rectification	–30V power supply for FL
D15, D16	DTZ15 (B)	Reference voltage	–30V power supply for FL
D17	DTZ5.1 (B)	Level shift	Shifts DC level of AC 5 V for FL
D18	D3SBA20F03	Rectification	Power supply for main µ-com
D19	U1BC44	Protection of relay	Relay resisting voltage protection.
D20	DTZ6.8 (B)	Reference voltage	For IC21 +6.2V power supply
D21 ~ D24	U1BC44	Rectification	Rectification diode for power supply to drive recording head
D25, D26	MA110	Temperature compensation	+5V power supply for sub µ-com

CIRCUIT DESCRIPTION

2. Main μ-com : W05-0474-00 (X32-, IC13)

2-1. Pin connection



2-2. Pin function

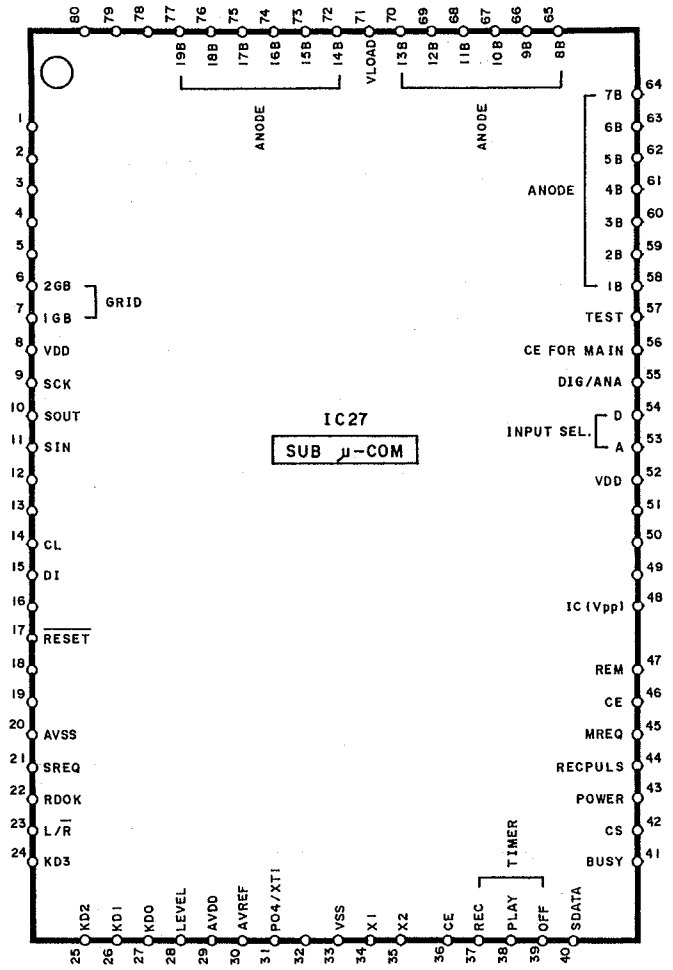
Pin No.	Pin name	I/O	Function
1	D.TYP	I	Disc type switch input. Playback disc : "L", REC/Playback disc : "H"
2	R.PRO	I	REC protect switch input, protect : "L"
3	RECPLS	O	Pulse output for time elapsed calculation in REC mode (to sub μ-com)
4	AVss	–	
5	LDPWR	O	Laser power control voltage D/A output
6	LEVEL	O	Audio signal level voltage D/A output (to sub μ-com)
7	AVREF1	–	Standard voltage input for D/A output (pin 6)
8	LEVEL L/$\overline{R}$	O	L/$\overline{R}$ distinction signal output of level output (to sub μ-com)
9	DIG/ANA	I	Digital / Analog distinction signal input of REC input (from sub μ-com)
10	NC	–	
11	SRDT	I	System IC, serial read data input
12	SWDT	O	System IC, write read data output
13	SCLK	O	System IC, serial data clock output
14, 15	NC	–	
16, 17	SER IN, SER OUT	I, O	Serial data (pin 16 : input, pin 17 : output) for communicating between main μ-com and sub μ-com
18	SER CLK	I/O	Serial data clock I/O port for communicating between main μ-com and sub μ-com
19 ~ 26	AD0 ~ AD7	O	S-RAM data I/O and address output
27 ~ 32	A8 ~ A13	O	S-RAM address output
33	Vss	–	

Pin No.	Pin name	I/O	Function
34	A14	O	S-RAM address output
35	NC	–	
36	XLAT	O	System IC, serial write data latch output
37	XRST	O	System IC, reset output
38, 39	NC	–	
40	RD	O	S-RAM output enable output
41	WR	O	S-RAM write enable output
42	NC	–	
43	ASTB	O	S-RAM address (AD0 ~ AD7) latch output
44	MREQ	O	Main request output for communicating between main μ-com and sub μ-com
45	RD OK	I	Sub read OK input for communicating between main μ-com and sub μ-com
46	WRMN	O	CXD2526Q Write mode/$\overline{\text{Read mode}}$ output
47	SBMN	O	CXD2526Q record counter SDCT/$\overline{\text{DCT}}$ output
48	SCTX	O	CXD2526Q data output enable output in REC mode
49	AGC F	O	CXA1381Q AGC time constant switching output
50	RFSW0	O	CXA1381Q high Playback disc/REC and Playback disc , distinction signal output
51	RFSW1	O	CXA1381Q Pit/$\overline{\text{Groove}}$ distinction signal output
52	FOK	I	Focus OK signal input
53	CLVLOCK	I	CXD2525Q CLV lock input
54	RCPB	O	CXD2525Q, CXD2526Q Recording/$\overline{\text{Playback}}$ mode output
55	MUTE	O	Audio output mute signal output
56	RMS	O	Laser high frequency $\overline{\text{ON}}$/OFF output
57	REC	O	Record head driver signal ON/$\overline{\text{OFF}}$ output
58	EMPH	O	Emphasis signal output
59	ADCAL	O	A/D convertor calibration signal output
60	RST	I	Reset input
61	CE	I	Chip enable input
62	XINT	I	CXD2526Q interrupt request input
63	ADSY	I	CXD2525Q ADIP sync input
64	SENS	I	CXA1082BQ, CXD2525Q sens input
65	SREQ	I	Sub request input for communicating between main and sub μ-com
66, 67	NC	–	
68	VDD	–	
69	X2	O	Clock oscillation output
70	X1	I	Clock oscillation input
71	IC	–	
72	XT2	–	
73	XT1	–	
74	AVDD	–	
75	AVREF0	–	Standard voltage input for D/A output (pin 5)
76	SLT	I	Pickup start limit switch
77	CLT	I	Tray close limit switch input
78	OPLT	I	Tray open limit switch input
79	CLS	O	Tray close signal output
80	OPN	O	Tray open signal output

CIRCUIT DESCRIPTION

3. Sub μ-com : W05-0475-00 (X27-, IC27)

3-1. Pin connection



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CIRCUIT DESCRIPTION

3-2. Pin function

Pin No.	Pin name	I/O	Function
1 ~ 5	NC	–	
6, 7	2GB, 1GB	O	Grid output for FL
8	VDD	–	Power supply (+5V)
9	SCK	I/O	Serial data clock I/O port for communicating between main and sub μ-com
10	SOUT	O	Serial data output for communicating between main and sub μ-com
11	SIN	I	Serial data input for communicating between main and sub μ-com
12, 13	NC	–	
14	CL	O	Serial data clock output to FL driver IC
15	DI	O	Serial data output to FL driver IC
16	NC	–	
17	$\overline{\text{RESET}}$	I	Reset signal input
18, 19	NC	–	
20	AVSS	–	Connected to GND
21	SREQ	O	Sub request output for communicating between main and sub μ-com
22	RDOK	O	Sub read OK output for communicating between main and sub μ-com
23	L/$\overline{\text{R}}$	I	L/$\overline{\text{R}}$ distinction signal input of level output
24 ~ 27	KD3 ~ KD0	I	Key input
28	LEVEL	I	Audio signal level voltage D/A input
29, 30	AVDD, AVREF	–	Power supply (+5V)
31	P04/XT1	–	Connected to GND
32	NC	–	
33	VSS	–	Connected to GND
34, 35	X1, X2	–	Oscillation connection
36	CE	O	Chip enable output
37	REC	I	Timer switch detection REC
38	PLAY	I	Timer switch detection PLAY
39	OFF	I	Timer switch detection OFF
40	SDATA	I/O	Serial data signal I/O
41	BUSY	I/O	Serial busy signal I/O
42	CS	O	HM62256ALFP-12T control signal output
43	POWER	O	Power ON/OFF control
44	RECPULSE	I	Pulse input for time elapsed calculation in REC mode
45	MREQ	I	Main request input for communicating between main and sub μ-com
46	CE	I	Chip enable signal input
47	REM	I	Remote control signal input
48	IC (VPP)	–	Connected to GND
49 ~ 51	NC	–	
52	VDD	–	Power supply (+5V)
53	Input sel. A	I	Input selector switch input ANALOG
54	Input sel. D	I	Input selector switch input DIGITAL
55	DIG/ANA	O	Digital / Analog distinction signal input
56	CE for main	O	Chip enable output
57	TEST	I	Test port
58 ~ 70	1B ~ 13B	O	Anode output for FL, key scan output
71	VLOAD	–	Power supply (-30V)
72 ~ 77	14B ~ 19B	O	Anode output for FL, key scan output
78 ~ 80	NC	–	

CIRCUIT DESCRIPTION

4. 64-time Over-sampling, with Digital Filter, 16-bit Stereo A/D Convertor : CS5339-KS (X27-, IC7)

4-1. Features

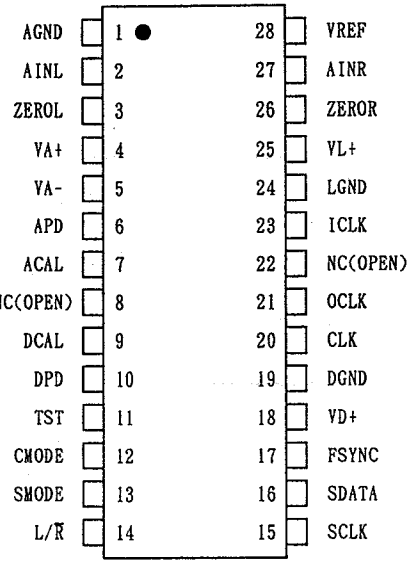
- High-performance 2-ch A/D conversion system
  Simultaneous sampling of 2 channels
  With digital filter for prevention of noise at turn
  With sample/hold circuit and reference voltage source
- 64-time over-sampling method
  Applicable to digital audio system sampling rate of 32kHz, 44.1kHz, 48kHz, etc.

4-2. Outline

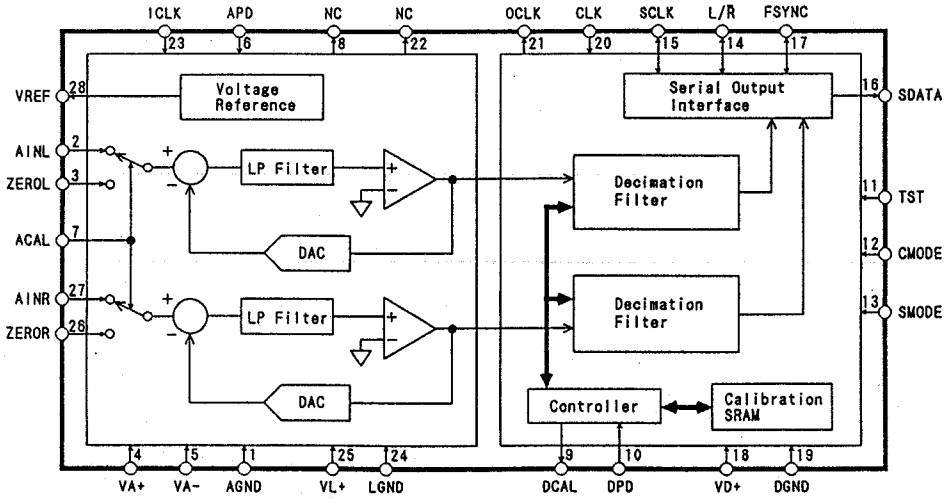
CS5339 is a 16-bit 2-ch A/D converter of quartic ΔΣ type. This converter has two ΔΣ modulators and samples analog input signals simultaneously at the 64-time sampling rate (64fs). The over-sampled data are decimated by the digital filter into 16-bit data of fs.

The input range is set to ±3.68V by the reference voltage source. An offset error is canceled by starting the calibration cycle when the power is turned on. The calibration cycle can be started at any time. The output data are 16-bit serial data coded with complement of 2's, 3-bit over/under-scale flag, and L/$\overline{R}$ flag.

4-3. Pin connection



4-4. Block diagram



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CIRCUIT DESCRIPTION

4-5. Pin function

Pin No.	Pin name	I/O	Function
1	AGND	–	Analog ground pin
2	AINL	I	Analog input pin (Lch)
3	ZEROL	I	Zero level input pin of (Lch) Generally, input voltage of this pin is set to zero level for calibration of offset of Lch.
4, 5	VA+, VA–	–	Analog positive, negative power supply pin of (+5 V, –5V) of analog section
6	APD	I	Power down pin of analog section. If this pin is "H", power down mode is selected.
7	ACAL	I	Analog calibration pin. Generally, this pin is connected to DCAL pin. Input pin of outside signal is changed according to level of this pin. "H": Zero level input pin (ZEROL, ZEROR), "L": Analog input pin (AINL, AINR)
8	NC	–	
9	DCAL	O	Digital calibration pin. Indicates offset calibration is executed. Generally, connected to ACAL pin. If power down signal is input to DPD pin, this pin rises immediately. It becomes "L" 4096 L/$\overline{R}$ period (Above 85ms when fs = 48kHz) after fall of DPD pin to indicate finish of calibration.
10	DPD	I	Power down pin of digital section. If this in is "H", power down mode is selected. Offset calibration is started at fall of this pin. When power is turned on or clock frequency is changed, be sure to perform calibration.
11	TST	I	Test pin, connected to DGND
12	CMODE	I	Master clock pin. "L": CLK = 256fs (12.288MHz @fs = 48kHz), "H" : CLK = 384fs (18.432MHz @fs = 48kHz)
13	SMODE	I	Interface clock selector pin. Used to set input and output of each clock pin of L/$\overline{R}$, SCLK, and FSYNC. "L": Slave mode (All pins are input pins.), "H": Master mode (All pins are output pins.)
14	L/$\overline{R}$	I/O	Input channel selector pin. Slave mode : Fs clock is input. MSB data of Lch is output at rising edge, and MSB data of Rch is output falling edge.
15	SCLK	I/O	Serial data clock pin. Output data is output by 1 bit at fall of this pin. Slave mode : Clock of 32fs~64fs is input.
16	SDATA	O	Serial data output pin. Data are output with complement of 2's in order from MSB. After 16 bits are output, 3-bit over/under-scale flag and L/$\overline{R}$ flag are output.
17	FSYNC	I/O	Frame synchronizing clock pin. Slave mode : If this pin is "H", outputting of SDATA is enabled.
18	VD+	–	+5V power supply (digital section)
19	DGND	–	GND (digital section)
20	CLK	I	Master clock input pin. CMODE = "L" : 256fs
21	OCLK	O	128 fs clock output pin. Toggles at rise of master clock (CLK). Set to "L" when power is down (DPD = "H").
22	NC	–	
23	ICLK	I	128 fs clock input pin. Clock of analog section. Connected to OCLK pin. Sampling rate of Δ Σ modulator is 64 fs.
24	LGND	–	Logic ground pin (analog section).
25	VL+	–	Logic power supply (analog section).
26	ZEROR	I	Rch zero level input pin. Generally, offset of Rch is calibrated with input voltage of this pin as zero level.
27	AINR	I	Rch analog input pin.
28	VREF	O	Reference voltage output pin, –3.68V. Full scale of input signal depends on this voltage. If VREF = –3.68V, FS = V ±3.68V. Electrolytic capacitor of 4.7μF and ceramic capacitor of 0.1μF are connected in parallel between this pin and AGND.

CIRCUIT DESCRIPTION

5. Digital Filter : SM5840ES (X27-, IC8)

5-1. Pin connection

(TOP VIEW)

WSL1	1 ●	22	DIN
CKI	2	21	BCKI
$\overline{\text{CKSL}}$	3	20	LRCI
CKO	4	19	(NC)
VSS	5	18	(NC)
(NC)	6	17	(NC)
(NC)	7	16	VDD
WSL2	8	15	WCKO
DSF1	9	14	DOL
DSF2	10	13	DOR
$\overline{\text{RST}}$	11	12	BCKO

5-2. Pin function

Pin No.	Pin name	I/O	Function
1	WSL1	Ip	Word length selector pin of input/output data 1
2	CKI	I	System clock input pin
3	$\overline{\text{CKSL}}$	I	System clock selector pin ($\overline{\text{CKSL}}$: "H" = 384fs, $\overline{\text{CKSL}}$: "L" = 256fs)
4	CKO	O	System clock output pin (Clock of CK1 is buffered and output.)
5	VSS	–	GND
6, 7	NC	–	
8	WSL2	Ip	Word length selector pin of input/output data 2 (refer to function of pin 1)
9	DSF1	Ip	De-emphasis selector pin 1
10	DSF2		De-emphasis selector pin 2
11	$\overline{\text{RST}}$	Ip	System reset ($\overline{\text{RST}}$: "L" = Reset and initialize)
12	BCKO	O	Output bit clock
13, 14	DOR, DOL	O	8fs data output (pin 13 : Rch, pin 14 : Lch)
15	WCKO	O	Output word clock
16	VDD	–	+5V power supply
17 ~ 19	NC	–	
20	LRCI	Ip	Sample rate (fs) clock of input data
21	BCKI	Ip	Input bit clock
22	DIN	Ip	Input data

Setting		Noise shaper	Word length of I/O data	
WSL1	WSL2		Input bits	Output bits
H	H	OFF	18-bit	20-bit
H	L	ON	18-bit	18-bit
L	H	ON	16-bit	18-bit
L	L	ON	16-bit	16-bit

De-emphasis selector pin 1	De-emphasis selector pin 2	Setting		De-emphasis	
		DSF1	DSF2	Select ON/OFF	Select fs
		L	L	ON	44.1kHz
		L	H	ON	48.0kHz
		H	H	ON	32.0kHz
		H	L	OFF	–

Note : "fs" in the following explanation means the sampling frequency of input data.
"Ip" is an input terminal with a pull-up resistor. Accordingly, it may be opened when the H level is set.

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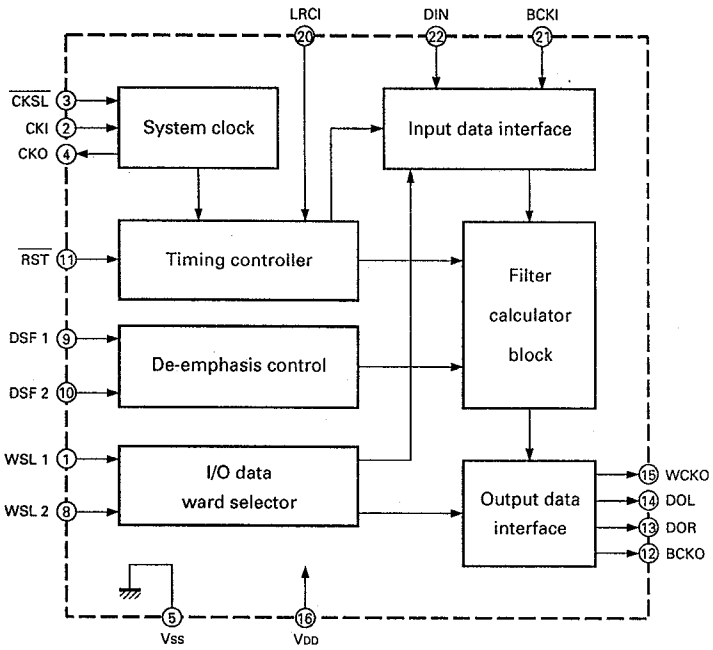
CIRCUIT DESCRIPTION

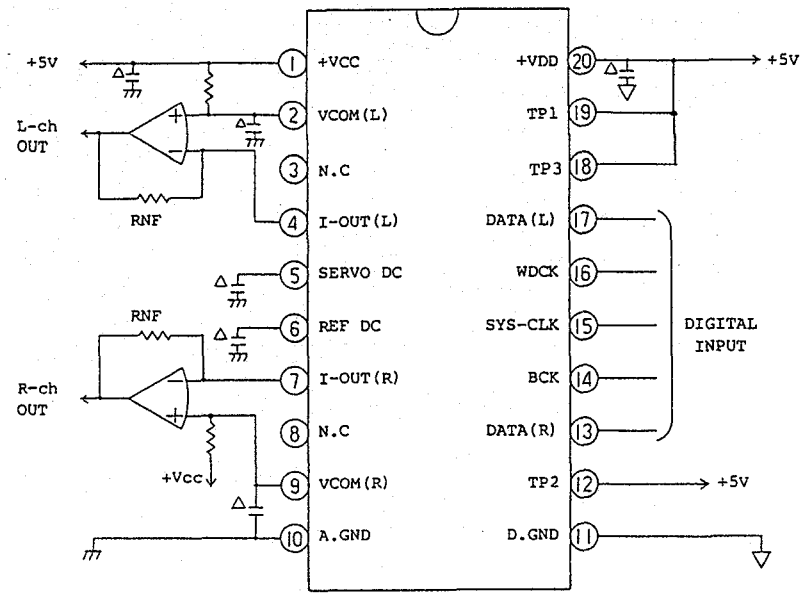
5-3. Block diagram



CIRCUIT DESCRIPTION

6. BICMOS Dual 18-bit Serial D/A Convertor : PCM69AU (X27-, IC9)

6-1. Pin connection



6-2. Pin function

No.	Pin name	I/O	Function
1	+Vcc	–	Analog positive power supply
2	VCOM (L)	–	Lch V common
3	NC	–	
4	I-OUT (L)	O	Lch current output
5	SERVO DC	–	Servo filter
6	REF DC	–	Reference filter
7	I-OUT (R)	O	Rch current output
8	NC	–	
9	VCOM (R)	–	Rch V common
10	A.GND	–	Analog common

No.	Pin name	I/O	Function
11	D.GND	–	Digital common
12	TP2	–	Test pin 2
13	DATA (R)	I	Rch data input
14	BCK	I	Bit clock input
15	SYS-CLK	I	System clock input
16	WDCK	I	Word clock input
17	DATA (L)	I	Lch data input
18	TP3	–	Test pin 3
19	TP1	–	Test pin 1
20	+VDD	–	Digital positive power supply

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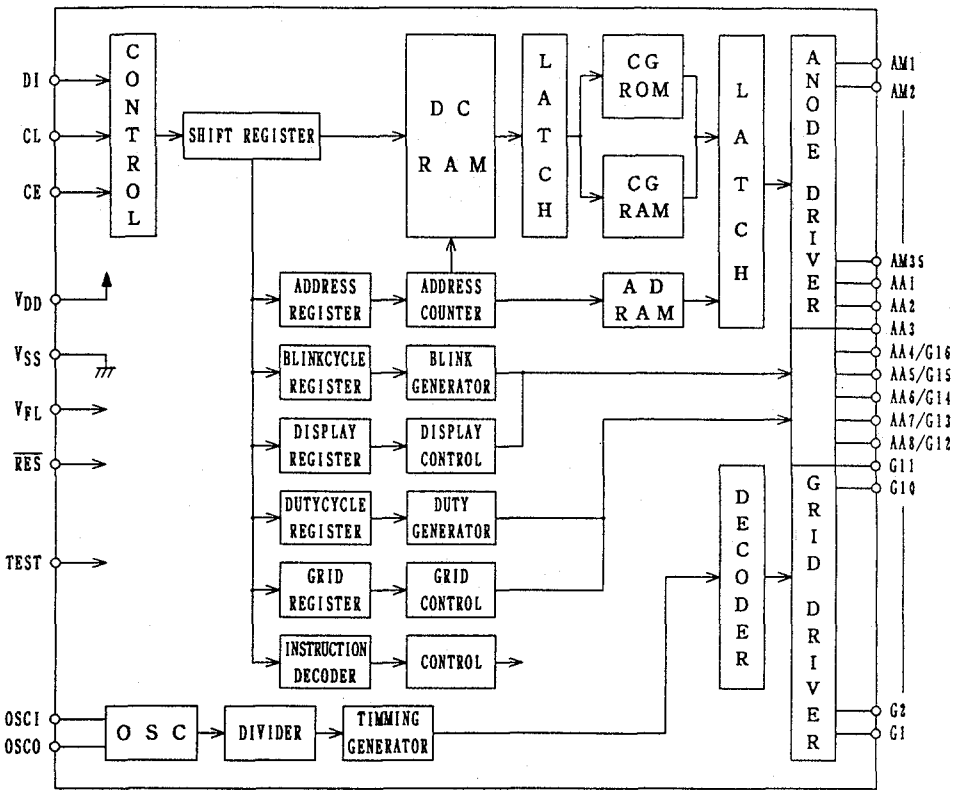
CIRCUIT DESCRIPTION

7. Controller Driver for 5x7 Dot Matrix VFD Display : LC75710E (X27-, IC26)

7-1. Block diagram



7-2. Pin function

No.	Pin name	I/O	Function
1 ~ 35	AM1 ~ AM35	O	Anode output pin with pull down resistor
36 ~ 38	AA1 ~ AA3	–	Not used
39 ~ 43	AA4/G16 ~ AA8/G12	O	Anode/Grid output pin. If 12 ~ 16 is selected as number of figures to be displayed by "Number of displayed figures setting" command, these terminals become grid output terminals. Have pull-down resistors.
44 ~ 54	G11, G10, 9GA ~ 1GA	O	Grid output pin with pull down resistor (G11 and G10 are not connected)
55	VFL	–	Driver section power supply
56	TEST	–	LSI test pin, connected to VSS
57	VSS	–	Logic section +5V power supply
58, 59	OSCO, OSCI	O, I	External capacitor and resistor connection pin for oscillator
60	VDD	–	Logic section +5V power supply
61	$\overline{RES}$	I	System reset input pin
62 ~ 64	CE, CL, DI	I	Serial data transmission (CE : Chip enable, CL : Sync. clock, DI : Transmission data)

CIRCUIT DESCRIPTION

8. RF Matrix Amplifier : CXA1381Q (X32-, IC1)

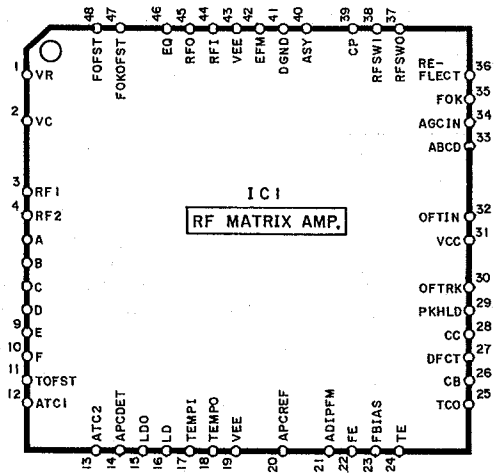
8-1. Outline

CXA1381Q processes the RF signals and servo signals used when a mini-disc is recorded or played back.

8-2. Features

- An equalizer circuit is attached to the RF signal processing circuit.
- The AGC (Automatic Gain Control) circuit by sensing and feeding back quantity of light.
- The APC (Automatic LASER Power Control) circuit with temperature compensation circuit.
- EFM (Eight to Fourteen Modulation) comparator with automatic asymmetry control.
- Focus error amplifier.
- Tracking error amplifier.
- Focus OK sensing circuit.
- Off-track sensing circuit.
- Tracking count signal output.
- Defect sensing circuit.
- ADIP (Address In Pre-groove) amplifier.

8-3. Pin connection



8-4. Pin function (VCC=5V, VEE=–5V, DGND=0V)

No.	Pin name	Normal voltage	I/O	Function
1	VR	0V (DC)	O	Voltage terminal of (Vcc – VEE)/2
2	VC	0V (DC)	–	When ± power is applied : GND. When single power is applied : Connected to pin No. 1 (VR).
3, 4	REF1, REF2	160mV (DC)	I	Input terminal of I-V converted RF signal 1 and 2.
5 ~ 8	A ~ D	40mVp-p - 36mV (DC) Tracking OFF	I	Input terminal of I-V converted main beam servo signal A ~ D.
9, 10	E, F	11mVp-p - 50mV (DC) Tracking OFF	I	Input terminal of I-V converted sub beam servo signal E and F.
11	TOFST	0V (DC)	I	Offset adjustment terminal for tracking error.
12	ATC1	25mVp-p	O	Push-pull signal output of main beam. Used as ADIP signal.
13	ATC2	25mVp-p	I	AGC input of ADIP signal. ATC1 is connected by AC coupling.
14	APCDET	0.35V (DC)	I	Photo diode is connected. I-V converted with a resistor to sense quantity of light.
15	LDO	3.5V (DC)	O	LD amp output terminal of APC.

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CIRCUIT DESCRIPTION

No.	Pin name	Normal voltage	I/O	Function
16	LD	0.35V (DC)	I	Inverting output of LD amplifier.
17	TEMPI	0V (DC)	I	Terminal to connect temperature sensor.
18	TEMPO	0V (DC)	O	Output terminal of temperature signal.
19	VEE	–5V (DC)	–	When ± power is applied : Negative power supply When single power is applied : GND
20	APCREF	0.35V (DC)	I	Input terminal for setting laser power.
21	ADIPFM	0.5Vp-p	O	FM signal output of ADIP signal.
22	FE	3.6Vp-p (Focus S-curve p-p)	O	Focus error signal output
23	FBIAS	0V (DC)	I	Focus bias adjustment input
24	TE	5Vp-p (when track jump)	O	Tracking error signal output
25	TCOUNT	Digital output	O	Tracking count signal output
26	CB	0.5V (DC)	–	Capacitor for defect peak hold
27	DFCT	±Digital output ("H" : defect)	O	Defect comparator output
28	CC	1V (DC)	I	AC input for defect peak hold
29	PKHLD	1V (DC)	O	Defect peak hold output
30	OFTRK	Digital output ("H" : Off-track)	O	Off track signal output
31	Vcc	5V (DC)	–	Power supply
32	OFTIN	0.3Vp-p (when track jump)	I	Optical signal input pin from main-beam servo-detector
33	ABCD	1V (DC)	I	Optical signal output pin from main-beam servo-detector
34	AGCIN	1V (DC)	I	AGC control input
35	FOK	Digital output ("H" : FOK)	O	Focus OK signal output
36	REFLECT	Digital output	O	Digital output for disc mirror-rate (low/high)
37	RFSW0	Digital input	I	Disc mode flip-flop signal input pin ("H" : High reflectance disc, "L" : Low reflectance disc)
38	RFSW1	Digital input	I	Disc mode flip-flop signal input pin ("H" : Track = Pit, "L" : Track = Groove)
39	CP	–3.6V (DC)	–	Capacitor pin for MIRR hold
40	ASY	2.5V (DC)	I	Auto-asymmetry control input pin
41	D.GND	0V (DC)	–	When ± power is applied : GND When single power is applied : GND (=VEE)
42	EFM	Digital output	O	EFM comparator output
43	VEE	–5V (DC)	–	When ± power is applied : Negative power supply When single power is applied : GND
44	RFI	1.1Vp-p	I	Equalizer output is connected by AC coupling and input to this terminal.
45	RFO	1.1Vp-p	O	Equalizer output terminal. Checkpoint of eye pattern.
46	EQ	–3.5V (DC)	–	Terminal to connect outside resistor for equalizer.
47	FOKOFST	0V (DC)	I	Offset adjustment terminal of ABCD amplifier.
48	FOFST	0V (DC)	I	Offset adjustment terminal of focus error amplifier.

CIRCUIT DESCRIPTION

9. ADIP Demodulator : CXA1380M (X32-, IC3)

9-1. Outline

CXA1380M can read the ADIP (Address In Pre-groove) signals written on a mini-disc.

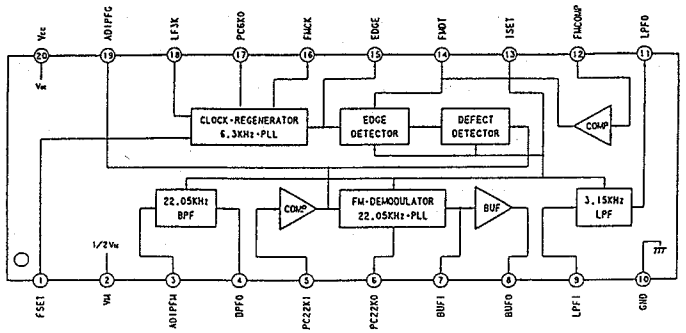
9-2. Features

- FM demodulator of ADIP.
- ADIP defect protection circuit.
- ADIP data clock generating circuit.
- FG circuit for CLV (Rough mode and standard mode)
- If CXA1380M is used together with CXA1381Q, CXD2525Q, etc., the address information recorded in a Recordable MD disc.

9-3. Uses

Used to take out the servo signal for motor control and address information from the ADIP signals of a mini-disc recorder, mini-disc player, etc.

9-4. Block diagram



9-5. Pin function

No.	Name	Normal voltage	I/O	Function
1	FSET	720mV	I	Terminal to set center frequency of VCO for ADIP Bit Clock Regenerator.
2	VM	2.5V	O	Terminal to output 1/2 of Vcc. Internal circuit bias voltage.
3	ADIP FM	450mVp-p	I	Input terminal of ADIP FM signal.
4	BPFO	1Vp-p + 2.5V	O	Output terminal of band-pass filter.
5	PC22KI	1Vp-p + 2.5V	I	Input terminal of phase comparator for FM demodulation. Output of BPFO is connected by capacity coupling and input.
6	PC22KO	Digital output	O	Output terminal of phase comparator for FM demodulation.
7	BUFI	0.8Vp-p + 2.5V		Feedback terminal of PLL for FM demodulation. Signal of PC22KO is input through loop filter.
8	BUFO	0.8Vp-p + 2.5V	O	Output terminal of FM demodulation signal.
9	LPFI	0.8Vp-p + 2.5V	I	Input terminal of low-pass filter. Output of BUFO is connected by capacity coupling and input.
10	GND	0V	–	GND
11	LPFO	0.15Vp-p + 2.5V	O	Output terminal of low-pass filter.
12	FM COMP	0.15Vp-p + 2.5V	I	Input terminal of comparator for ADIP data. Output of LPFO is connected by capacity coupling and input.
13	ISET	720mV		Inside circuit constant setting terminal. • Band-pass filter fc, • Low-pass filter fc • Center frequency of VCO for FM demodulation, • Edge pulse width, • Defect pulse width
14	FM DT	Digital output	O	Output terminal of ADIP data.
15	EDGE	Digital output	O	Output terminal of edge sensing signal of ADIP data.
16	FMCK	Digital output	O	Output terminal of ADIP bit clock.
17	PC6KO	Digital output	O	Output terminal of phase comparator for ADIP bit clock regenerator.
18	LF3K	0.2Vp-p + 2.5V	I	Feedback terminal of PLL for ADIP pit clock regenerator. Output of PC6KO is input through loop filter.
19	ADIPFG	Digital output	O	Comparator output terminal of ADIP FM data.
20	Vcc	5V	–	Power supply

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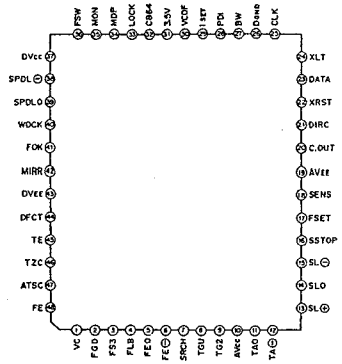
CIRCUIT DESCRIPTION

10. Servo Signal Processor : CXA1082BQ (X32-, IC4)

10-1. Pin connection



10-2. Pin function

No.	Name	I/O	Function
2	FGD	–	To lower the high frequency gain of the focus servo, insert a capacitor between this pin and 3 pin.
3	FS3	–	The high frequency gain of the focus servo is selected by switching FS3 ON/OFF.
4	FLB	–	Time constant external connect pin, for boosting the focus servo low frequencies.
5	FEO	O	Power transistor drive op-amp output pin.
6	FE–	I	Focus amplifier inverted input pin.
7	SRCH	–	Time constant external connect pin, for creating the focus search waveform.
8, 9	TGU, TG2	–	Time constant external connect pin, for selecting the tracking high frequency gain.
11	TAO	O	Power transistor drive op-amp output pin.
12	TA–	I	Tracking amplifier inverted input pin.
13	SL+	I	Feed motor drive amplifier non-inverted input pin.
14	SLO	O	Power transistor drive op-amp output pin.
15	SL–	I	Feed motor drive amplifier inverted input pin.
16	SSTOP	I	Limit switch ON/OFF detection signal input pin, for detecting the innermost edge of the disc.
17	FSET	–	Setting pin for the focus tracking phase peak value compensation, and of the CLV LPF.
18, 20	SENS, C.OUT	O	Output pins for an interface with a µ-com.
21~25	DIRCT, XRST DATA, XLT, CLK	I	Input pins for an interface with a µ-com. A 47kΩ pull-up resistor is only incorporated in pin 21.
27	BW	–	Loop filter time constant external connect pin.
28	PDI	I	Input pin for the phase comparator output PDO of CXD2525Q.
29	ISET	I	Input a current which determines the level of the focus search, track jump, and feed kick
30	VCOF	–	The self-advancing frequency of the VCO is almost proportional to the resistance between this pin and 31.
32	C864	O	8.64MHz VCO output pin.
33	LOCK	I	Input pins for an interface with a µ-com. A 47kΩ pull-up resistor is incorporated.
34	MDP	I	CXD2525Q MDP pin connect pin.
35	MON	I	CXD2525Q MON pin connect pin.
36	FSW	I	LPF time constant external connect pin, for the CLV servo error pin.
38	SPDL–	I	Disc motor drive amplifier inverted input pin.
39	SPDLO	O	Power transistor drive op-amp output pin.
40, 41 42, 44	WDCK, FOK MIRR, DFCT	I	Input pins for an interface with a µ-com.
45	TE	I	Tracking error signal input pin.
46	TZC	I	Tracking zero-cross comparator input pin.
47	ATSC	I	Window comparator input pin for ATSC detection.
48	FE	I	Focus error signal input pin.

CIRCUIT DESCRIPTION

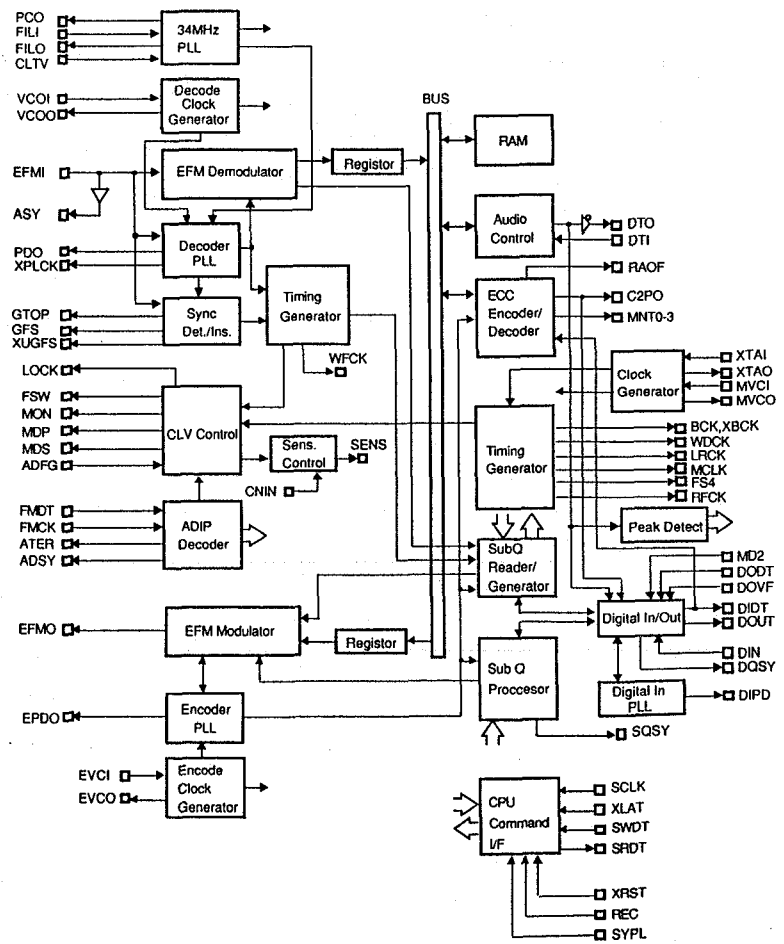
11. EFM/ACIRC Encoder/Decoder : CXD2525Q (X32-, IC6)

11-1. Outline

CXD2525Q is an EFM/ACIRC encoder/decoder matched to the format of mini-discs.

- EFM: Encode/Decode
- ACIRC: Encode/Decode
- ADIP: Decode
- EFM/ADIP: CLV control circuit
- EFM digital PLL
- With RAM for error correction
- Digital in/out
  (Perfectly matched to U-bit, C-bit, and SCMS)
- Peak level meter circuit
- 64-bit slot audio I/F
- New CPU I/F (Serial bus)
- Strong error correction
  (C1: Double correction, C2: Quadruple correction)

11-2. Block diagram



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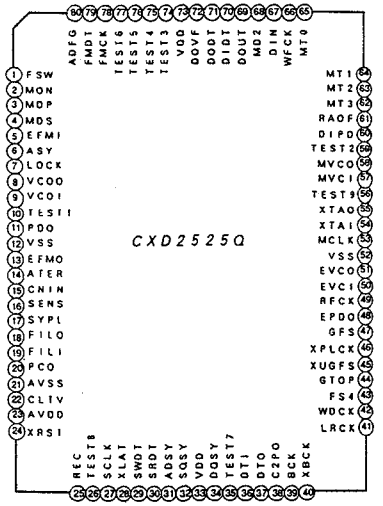
CIRCUIT DESCRIPTION

11-3. Pin connection



11-4. Pin function ("3" of I/O is a state output and "A" is an analog output.)

No.	Name	I/O	Function
1	FSW	O (3)	Output to change output filter of disc motor. Set to "Z" when CLV-P, and "L" in another mode.
2	MON	O	ON/OFF control output of disc motor. If "H", motor is turned on.
3, 4	MDP, MDS	O (3)	Servo control of disc motor
5	EFMI	I	EFM input in playback mode
6	ASY	O	EFM full swing output in playback mode
7	LOCK	O	Monitor of lock of disc motor servo (CLV). If "H", servo is locked.
8	VCOO	O	Analog PLL oscillation output (196 Fs = 8.6436 MHz) of EFM decoder
9	VCOI	I	Analog PLL oscillation output of EFM decoder
10	TEST1	I	Test pin (normal : GND)
11	PDO	O (3)	Analog PLL phase comparison output of EFM decoder.
12	Vss	–	GND (digital)
13	EFMO	O	EFM output in recording mode
14	ATER	O	ADIP CRC flag output. If "H", error is indicated.
15	CNIN	I	Input of truck jump counting signal
16	SENS	O (3)	Output terminal of internal status for address of serial bus
17	SYPL	I	Input terminal to change polarity of SQSY, ADSY, DQSY, and MQSY. If "H", active is High.
18	FILO	O (A)	Master PLL filter output for digital PLL
19	FILI	I	Master PLL filter input for digital PLL
20	PCO	O (3)	Master PLL phase comparison output for digital PLL.
21	AVss	–	GND (analog)
22	CLTV	I	Master PLL VCO control voltage input for digital PLL
23	AVDD	–	Power supply (analog)
24	XRST	I	System reset input (active "L")
25	REC	I	"L" : decoder, "H" : encoder
26	TEST8	I	Test pin (normal : GND)
27	SCLK	I	Serial bus clock input
28	XLAT	I	Serial bus latch input
29	SWDT	I	Input of data written in serial bus
30	SRDT	O (3)	Output of data read from serial bus

CIRCUIT DESCRIPTION

No.	Name	I/O	Function
31	ADSY	O	ADIP sync output
32	SQSY	O	sub-code Q sync output
33	VDD	–	Power supply (digital)
34	DQSY	O	SYNC (SCOR) output of sub-code Q of U-bit CD format of digital-in
35	TEST7	O	To be opened.
36	DTI	I	Audio signal input to be recorded
37	DTO	O (3)	Audio signal output to be played back. Impedance is heighten in recording mode.
38	C2PO	O	Playback : C2PO, D.REC : D.In-VFLAG, A.REC : 0*
39	BCK	O	2..8224MHz output (MCLK section)
40	XBCK	O	BCK inverting output (MCLK section)
41	LRCK	O	44.1kHz (= Fs) (MCLK section)
42	WDCK	O	88.2kHz (MCLK section)
43	FS4	O	176.4kHz (MCLK section)
44	GTOP	O	If "H", SYNC protection window is opened (INPUT EFM SYNC monitor output)*
45	XUGFS	O	If "L", unguarded frame SYNC (INPUT EFM SYNC monitor output)
46	XPLCK	O	PLL clock output of EFM decoder (98Fs = 4.3218MHz)*
47	GFS	O	"H" : frame sync OK (INPUT EFM SYNC monitor output)*
48	EPDO	O (3)	External PLL phase comparison output of EFM encoder (Freq. : Low→"H")
49	RFCK	O	7.35kHz (MCLK section)
50, 51	EVCI, EVCO	I, O	External PLL oscillation (pin 50 : input, pin 51 : output) of EFM encoder (196Fs = 8.6436MHz)
52	VSS	–	GND (digital)
53	MCLK	O	22.5792MHz output. Duty is not guaranteed.
54, 55	XTAI, XTAO	I, O	Xtal oscillation (pin 54 : input, pin 55 : output) (512Fs = 22.5792MHz)
56	TEST9	I	Fixed to "L".
57, 58	MVCI, MVCO	I, O	Digital-in PLL oscillation (pin 57 : input, pin 58 : output) (512Fs = 22.5792MHz)
59	TEST2	O	To be opened.
60	DIPD	O (3)	Digital-in PLL phase comparison output (Freq. : Low→"L")
61	RAOF	O	RAM overflow output (Monitor output of decoder)*
62 ~ 65	MT3 ~ MT0	O	Monitor output of correcting condition in playback mode
66	WFCK	O	7.35kHz output (EFM decoder PLL system in playback mode, EFM encoder PLL system in recording mode)
67	DIN	I	Digital audio input
68	MD2	I	ON/OFF terminal for digital audio-out. If "H", turned on.
69	DOUT	O	Digital audio output
70	DIDT	O	Audio data output terminal of digital audio input terminal
71	DODT	I	16-bit data input terminal for digital audio output
72	DOVF	I	Validity flag input terminal for digital audio output
73	VDD	–	Power supply (digital)
74	TEST3	I	Fixed to "L"
75	TEST4	O	To be opened.
76, 77	TEST5, TEST6	I	Fixed to "L".
78	FMCK	I	Clock input for reading ADIP (6.3kHz) (TTL Schmidt input)
79	FMDT	I	ADIP data input (TTL Schmidt input)
80	ADFG	I	ADIP carrier signal input (22.05kHz) (TTL Schmidt input)

*Notes • XUGFS is the frame SYNC, which is a negative pulse, obtained from the EFM signal. A signal before SYNC protection.
• PLL of XPLCK is so made that the inverting edge and falling edge of the EFM PLL clock will be matched to the changing point of the EFM signal.
• The GFS signal is set to "H" when the frame SYNC is matched to the internal protection timing.
• C2PO is a signal to indicate an error of the data.
• RAOF is generated when the 32k RAM exceeds the jitter margin of ±4F.

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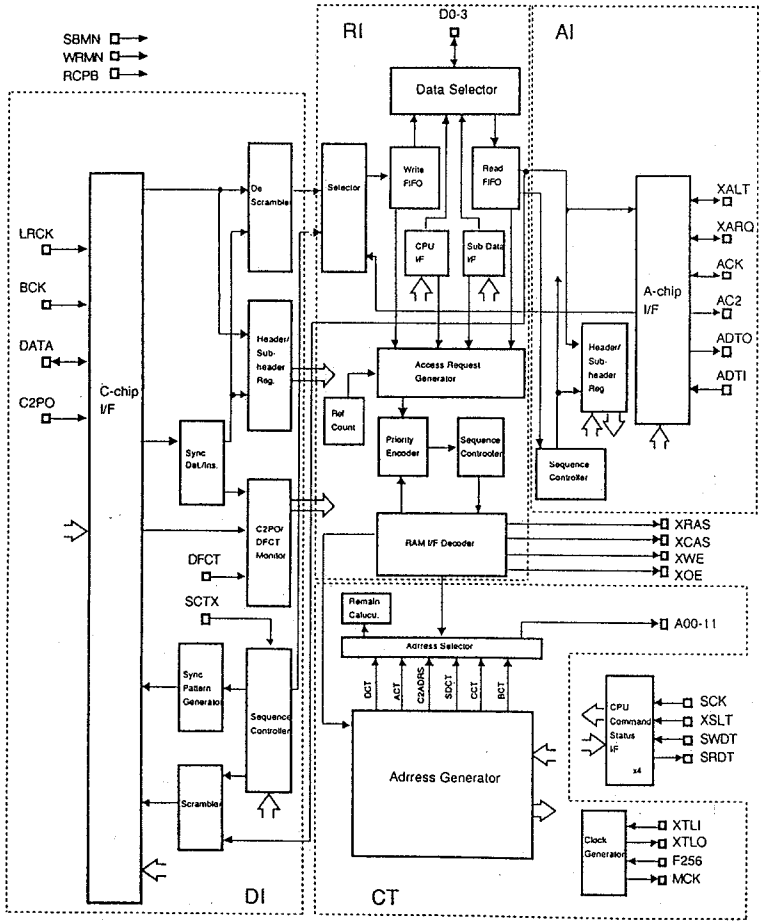
CIRCUIT DESCRIPTION

12. Sound Skip Guard Memory Controller : CXD2526Q (X32-, IC8)

12-1. Outline

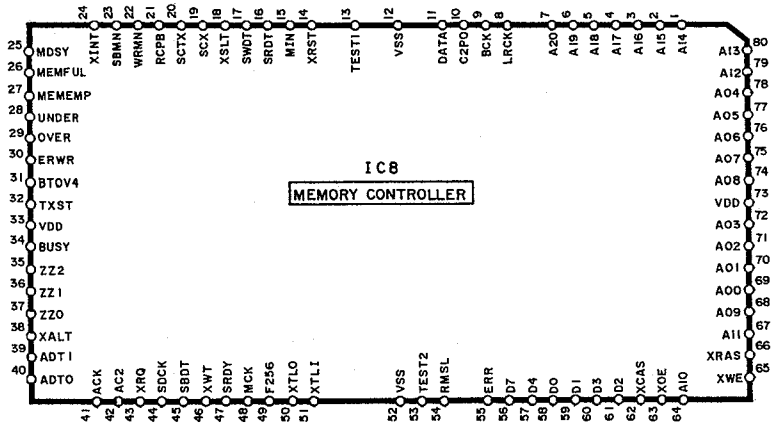
CXD2526Q is a memory controller used to make up a sound skip guard memory control. This device controls encoding and decoding, main data, C2PO data, sub data, system data for µ-com, and external input/output status of MD-formatted signals.

12-2. Block diagram



CIRCUIT DESCRIPTION

12-3. Pin connection



12-4. Pin function

No.	Name	I/O	Function
1	A14	O	RMSL = "H" : S-RAM address bus A14, RMSL = "L" : WFFUL*
2	A15	O	RMSL = "H" : S-RAM address bus A15, RMSL = "L" : RFEMP*
3	A16	O	RMSL = "H" : S-RAM address bus A16, RMSL = "L" : WFOVF*
4	A17	O	RMSL = "H" : S-RAM address bus A17, RMSL = "L" : WDTM*
5	A18	O	RMSL = "H" : S-RAM address bus A18, RMSL = "L" : ZERO*
6	A19	O	RMSL = "H" : S-RAM address bus A19, RMSL = "L" : MDTSC*
7	A20	O	RMSL = "H" : S-RAM address bus A20, RMSL = "L" : CMPSY*
8	LRCK	I	LRCK input from EFM encoder/decoder.
9	BCK	I	BCK input from EFM encoder/decoder.
10	C2PO	I	C2PO input from EFM decoder.
11	DATA	I/O	Input/Output data from decoder in playback mode and to encoder in recording mode.
12	Vss	–	GND
13	TEST	I	Terminal for test, to be fixed to "L" normally.
14	XRST	I	Reset input ("L" : Reset)
15	MIN	I	Monitor signal input terminal of external input. Input a signal to be monitored.
16	SRDT	O (HiZ)	Serial data output terminal of µ-com. If read register of CXD2526 is not selected, this terminal becomes Hi-z.
17	SWDT	I	Serial data input terminal of µ-com.
18	XSLT	I	Latch signal input terminal of serial data of µ-com.
19	SCK	I	Shift clock signal input terminal of serial data of µ-com.
20	SCTX	I	Enable signal input terminal for outputting data in recording mode.
21	RCPB	I	"L": Playback mode, "H": recording mode
22	WRMN	I	"H": Write mode, "L": Monitor mode
23	SBMN	I	"H": Input signal is recorded according to SDCT, "L": Input signal is recorded according to DCT.
24	XINT	O	Interrupt request output terminal. Becomes "L" when an interrupt status occurs.
25	MDSY	O	MD SYNC sensing signal of input data.

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CIRCUIT DESCRIPTION

No.	Name	I/O	Function
26	MEMFUL	O	Becomes "H" when main data area is full of data.
27	MEMEMP	O	Becomes "H" when main data area is empty.
28	UNDER	O	Becomes "H" when RMS < THUND.
29	OVER	O	Becomes "H" when RMS ≥ THOVR.
30	ERWR	O	Becomes "H" when data of raised C2PO is written in RAM.
31	BTOV4	O	Becomes "H" when BCT ≥ 400 (Hex).
32	TXST	O	Becomes "H" when data are transferred.
33	VDD	–	System power supply.
34	BUSY	I/O	Becomes "H" when RAM is accessed.
35 ~ 37	ZZ2 ~ ZZ0	I	Test signal, fixed to "L".
38	XALT	O	Data-ready or latch signal for CXD2527R.
39	ADTI	I	Terminal to input data from CXD2527R.
40	ADTO	O	Terminal to output data for CXD2527R.
41	ACK	O	Terminal to I/O data clock from CXD2527R.
42	AC2	O	Terminal to C2PO output data for CXD2527R.
43	XRQ	I	Terminal to input data request signal from CXD2527R.
44	SDCK	I	Shift clock input of external sub data I/F.
45	SBDT	I/O	External sub data I/F data output terminal in playback mode and data input terminal in recording mode.
46	XWT	O	Wait signal of external sub data I/F. If this terminal is "L", do not send clock to read new data.
47	SRDY	O	Access permission signal of external sub data I/F. When this terminal is "H", clock for reading or writing sub data is ignored.
48	MCK	O	128fs output
49	F256	O	256fs output
50	XTLO	O	System clock output
51	XTLI	I	System clock input terminal, input 22.5792MHz.
52	Vss	–	GND
53	TEST	I	Fixed to "L"
54	RMSL	I	External RAM select terminal. ("H" : S-RAM, "L" : D-RAM)
55	ERR	I/O	When EXTC2R = "H", this terminal is used as input/output terminal of C2PO.
56	D7	O	When RMSL = "H", data line D7 of S-RAM. When former is "L", test signal.
57	D4	I/O	When RMSL = "H", RAM data bus D4. When former is "L", test signal.
58 ~ 61	D0, D1, D3, D2	I/O	Data bus (D0, D1, D3, D2) of RAM
62	XCAS	I/O	When RMSL = "L", CAS output of D-RAM. When RMSL = "H", data bus D6.
63	XOE	O	Output enable of RAM
64	A10	O	RAM address bus A10
65	XWE	O	Write enable of RAM
66	XRAS	I/O	When RMSL = "L", RAS output of DRAM. When former is "H", data bus D5.
67, 68	A11, A9	O	RAM address bus (A11, A9)
69 ~ 72	A0 ~ A3	O	RAM address bus (A0 ~ A3)
73	VDD	O	System power supply
74 ~ 78	A8 ~ A4	O	RAM address bus A8 ~ A4
79	A12	O	RMSL = "H", RAM address bus A12, former is "L", CS output.
80	A13	O	RMSL = "H", RAM address bus A13, former is "L", SYOK output.

*Notes
- WFFUL : Becomes "H" when writing FIFO is full.
- RFEMP : Becomes "H" when reading FIFO is empty.
- WFOVF : Becomes "H" when writing FIFO is overflow.
- WDTM : Outputs timing of window in DI block.
- ZERO : When BCT=0, "H" is output.
- MDTSC : Becomes "H" when header sector of input data is #00 -IF. Becomes "L" in another case.
- CMPSY : Internal SYNC timing.

CIRCUIT DESCRIPTION

13. ATRAC Encoder/Decoder : CXD2527R (X32-, IC10 · IC11)

13-1. Outline

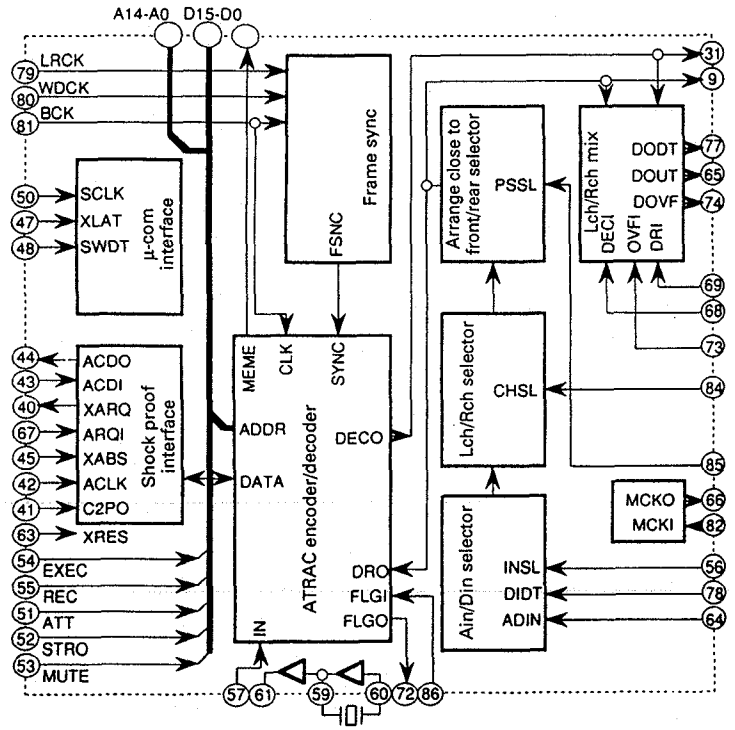
CXD2527R is an LSI which processes the sound compressing technology ATRAC (Adaptive Transform Acoustic Coding) of the mini-disc recorder.

This LSI has A/D and D/A converter interfaces. If it is combined with the mini-disc encoder/decoder processing LSI CXD2525Q and the shock-proof control LSI CXD2526Q, it can compress and expand the band in real time.

13-2. Features

- One chip performs ATRAC processing of one channel.
- Applicable various settings by using the serial and parallel microcomputer interfaces.
- Applicable various A/D and D/A converters by using the serial audio interface.
- Applicable to processing errors of playback data.

13-3. Block diagram



13-4. Pin function (All the input terminals, except the pin 60 "X1", are compatible with TTL.)

No.	Name	I/O/T	Function
1 ~ 6	D5 ~ D0	I/O/T	Connected to GND.
7	Vcc	–	+5V power supply
8	RSVD	I	Chip reserve terminal. Connect to power supply.
9	DRO	I/O	Encoder input monitor terminal.
10	RSVD	I/O/T	Chip reserve terminal. Connect to GND.
11 ~ 17	A0 ~ A6	I/O/T	Connected to GND.
18	GND	–	Connected to GND.
19 ~ 24	A7 ~ A12	I/O/T	Connected to GND.
25	GND	–	GND (+5V)
26	Vcc	–	+5V power supply
27, 28	A13, A14	O/T	To be opened.
29	RSVD	I	Chip reserve terminal. Connect to power supply.
30	RSVD	I/O/T	Chip reserve terminal. Connect to GND.
31	DECO	O/T	Decoding output in playback mode. Connect to DECI of another channel.
32	RSVD	O/T	Chip reserve terminal. To be opened.
33	RSVD	I/O/T	Chip reserve terminal. Connect to GND.
34	MEME	I/O/T	Enable of external memory. Connect to GND.
35, 36	RSVD	I/O/T	Chip reserve terminal. Connect to GND.
37	GND	–	GND
38, 39	Vcc	–	+5V power supply
40	XARQ	O	Request of data transfer from CXD2526Q (Transfer is requested : "L")
41	C2PO	I	Error status of input data from CXD2526Q (Error : "H")
42	ACLK	I	Serial transfer clock (128fs) for CXD2526Q
43	ACDI	I	Data input from CXD2526Q (Synchronized with rise of ACLK)
44	ACDO	O/T	Data output for CXD2526Q (Synchronized with rise of ACLK)
45	XABS	I	Synchronizing pulse for serial transfer to CXD2526Q
46	RSVD	O/T	Chip reserve terminal. To be opened.
47	XLAT	I	Latch pulse of serial µ-com command
48	SWDT	I	Serial µ-com command (Synchronized with rise of SCLK)
49	Vcc	–	+5V power supply
50	SCLK	I	Transfer clock of µ-com commands and status
51	ATT	I	Attenuation command (ATT ON : "H")
52	STRO	I	Stereo/Monaural command (Stereo : "L")
53	MUTE	I	Mute command (REC : "H")
54	EXEC	I	Start/Stop command (Start : "H")
55	REC	I	Recording/Playback command (Recording when "High")
56	INSL	I	Recording input command (DIDT : "H", ADIN : "L")
57	XTAI	I	Master clock
58	GND	–	GND (0V)
59	XO	O	Quartz oscillation output.
60	XI	I	Quartz oscillation input. Connect to ground when unused.
61	XTAO	O	Master clock output. Connect to XTAI of current channel/ another channel.
62	Vcc	–	+5V power supply
63	XRES	I	Reset (Reset : "L")
64	ADIN	I	Analog recording input (Connect A/D converter output)
65	DOUT	O	Monitor output (Connect to D/A converter input)
66	MCKO	O	256fs (11.9826MHz) clock output
67	ARQI	I	XARQ input of another channel.
68	DECI	I	DECO input of another channel.
69	DRI	I	DODT input of another channel.
70, 71	RSVD	O/T	Chip reserve terminal. To be opened.
72	FLGO	O	Flag for synchronizing two channels. Connect FLGI of another channel.
73	OVFI	I	DOVF input of another channel.
74	DOVF	O	Validity flag
75	GND	–	GND (0V)
76	Vcc	–	+5V power supply
77	DODT	O	Digital-out modulation output to CXD2525Q
78	DIDT	I	Digital recording input (Connect DIDT of CXD2525Q)
79	LRCK	I	44.1kHz (fs)
80	WDCK	I	88.2kHz (fs)
81	BCK	I	2.8224MHz (64fs)
82	MCKI	I	22.5792MHz (512fs) Connected to GND when not use
83	Vcc	–	+5V power supply
84	CHSL	I	L/R channel command ("H" : Lch)
85	PSSL	I	Command to arrange ADIN close to front/rear (Arranged close to rear : "H")
86	FLGI	I	FLGO input of another channel.
87, 88	GND	–	GND (0V)
89 ~ 96	D15 ~ D8	I/O/T	Connected to GND
97	Vcc	–	+5V power supply
98	GND	–	GND (0V)
99, 100	D7, D6	I/O/T	Connected to GND

CIRCUIT DESCRIPTION

14. ILD (Laser Current) Sensing Unit (X25-)

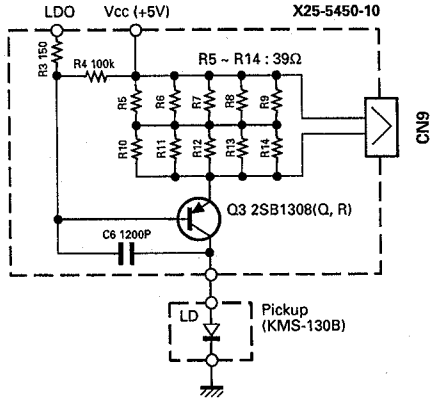
The current for generating laser is controlled by Q3. This is obtained from CN9 as the voltage over both end of the resistors R5 - R14.

ILD (A) = VCN (V)/15.6

ILD : Laser current

VCN : Voltage at CN9

Normally, the ILD (current) value is conformed to the value printed on the pickup when the laser emission power is 6.85mW. The current increases as laser unit is deteriorated. It is judged that the laser unit has reached the end of its life when the current increases 20%.



ADJUSTMENT

No.	ITEM	INPUT SETTING	OUTPUT SETTING	PLAYER SETTING	ALIGNMENT POINT	ALIGN FOR	FIG.
1	RECORDING POWER ADJUSTMENT OF MAGNETIC HEAD	–	Connect a DC voltmeter over Q12 (E) and GND.	STOP or PLAY	HD. DRV. PWR. VR12	DC +4V	
2	PLL VCO	Input digital signal of 44.1kHz for sampling to optical input terminal.	Connect a DC voltmeter over Q18 (C) and GND.	Set to MONITOR ON (Remote controller), RECORDING, INPUT SELECTOR : OPT.	DIN PLL L1	DC +2.5V	
3	READING LASER POWER ADJUSTMENT	–	Apply sensor of optical power meter over laser and pickup-lens.	Short TEST pin to GND and turn POWER on, then select TEST MODE. "TEST" blinks for a while, then "TEST OK" is indicated. Push ►► key to confirm that "TEST 1" is indicated.	APC VR1	0.68mW ±0.02mW	
4	RECORDING LASER POWER ADJUSTMENT	–	Apply sensor of optical power meter over laser and pickup-lens.	Push ◄◄ key to confirm that "TEST 2 MIN" ◄◄ is indicated. Then, "TEST 2 MAX." and "TEST 2 MIN" is selected alternately each time key is pushed.	TEMP VR2	0.68mW ±0.2mW "TEST 2 MAX" is indicated.	
5	FOCUS OK OFFSET	–	Connect a DC voltmeter over CN8-4 (ABCD) and GND.	Push STOP key and confirm "TEST OK" is displayed.	FOK OFST VR3	DC = 0 ±50mV	
6	FOCUS OFFSET	–	Connect a DC voltmeter over CN7-2 (FE1) and GND.	Push STOP key and confirm "TEST OK" is displayed.	FOFST VR4	DC = 0 ±50mV	
7	PIT TRACKING OFFSET	–	Connect a DC voltmeter over CN7-6 (TE1) and GND.	Push TRACK DELETE key. Each time it is pushed, "TEST 5G" and "TEST 5P" is indicated alternately. Confirm that "TEST 5P" is indicated.	PIT TOF VR5	DC = 0 ±50mV	
8	GROOVE TRACKING OFFSET	–	Connect a DC voltmeter over CN7-6 (TE1) and GND.	Push TRACK DELETE key and confirm "TEST 5G" is displayed.	GRV TOF VR6 (VR7)*	DC = 0 ±50mV	
9	PIT TRACKING BALANCE	PRE-MASTERED DISC	Connect an oscilloscope over CN7-6 (TE1) and GND.	Set pre-mastered disc. After "TEST OK" is indicated, push PLAY key. After "TEST 3 ON" is indicated, push PAUSE key, and "TEST 3 OFF" is indicated.	PIT T.B VR7 (VR6)*	Symmetry between upper or lower or DC ±0.1V	

NOTE : ( )* = DM-1001

ADJUSTMENT

No.	ITEM	INPUT SETTING	OUTPUT SETTING	PLAYER SETTING	ALIGNMENT POINT	ALIGN FOR	FIG.
10	GROOVE TRACKING BALANCE	RECORDABLE DISC	Connect an oscilloscope over CN7-6 (TE1).	Set recordable disc. After "TEST OK" is indicated, push PLAY key. After "TEST 3 ON" is indicated, push PAUSE key, and "TEST 3 OFF" is indicated.	GRV T.B VR8	Symmetry between upper or lower or DC ±0.1V	
11	FOCUS BIAS	RECORDABLE DISC	Connect an oscilloscope over CN7-1 (RF).	Set a recordable disc. After "TEST OK" is indicated, push PLAY key. Confirm that "TEST 3 ON" is indicated.	F. BIAS VR9	Eye pattern is at maximum and best.	
12	FOCUS GAIN	RECORDABLE DISC Apply signal of 1.0kHz, 100m Vrms to CN7 pin 2-3.	Connect a L.P.F. to CN7 pin 2-3 to which connect an oscilloscope or two AC voltmeters.	Set a recordable disc. After "TEST OK" is indicated, push PLAY key. Confirm that "TEST 3 ON" is indicated.	F. GAIN VR10	Two VTVMs should read the same value.	
13	TRACKING GAIN	RECORDABLE DISC Apply signal of 1.0kHz, 100m Vrms to CN7 pin 5-6.	Connect a L.P.F. to CN7 pin 5-6 to which connect an oscilloscope or two AC voltmeters.	Set a recordable disc. After "TEST OK" is indicated, push PLAY key. Confirm that "TEST 3 ON" is indicated.	TRACKING GAIN VR11	Two VTVMs should read the same value.	

(Note)

- REPEAT KEY ... TEST MODE canceled
- ⏮ KEY ... ALL OFF
- ⏭ KEY ... ALL ON
- TITLE KEY ... Cluster point is indicated

ADJUSTMENT

Laser power set

Laser power when playing high reflectance disc (PIT) and low reflectance (GROOVE) depends on D.TYPE switch (S1). When recording, laser power depends on TOC information.

Mode	APC REF (IC1 20pin)	Laser power	D.type SW (S1)
High reflectance disc (playback)	0.18V	0.34mW	ON
Low reflectance disc (playback)	0.35V	0.68mW	OFF
Recordable disc (recording) min.	1.73V	3.4mW	OFF
Recordable disc (recording) max.	3.27V	6.8mW	Laser power depends on TOC

Control by μ-com

RF switches are set by the kind of disc and track.

RFSW1 (1 : Track is PIT, 0 : Track is GROOVE)

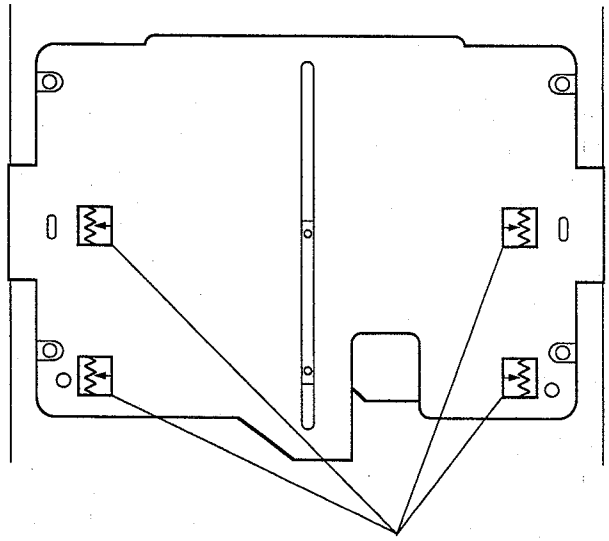
RFSW0 (1 : High reflectance disc, 0 : Low reflectance disc)

Mode	RFSW1 (IC1 38pin)	RFSW0 (IC1 37pin)
Groove area of recordable disc	0	0
PIT area of recordable disc	1	0
High reflectance disc (Premastered)	1	1

Adjustment of Tray Gear

Stop the tray at the center as shown below while it is opening or closing, then adjust the gear position so that all the arrows can be seen at the center through the four holes (on the top).

The gear of the tray does not go out of the position during the normal opening operation. If only one tooth of it is shifted, however, during servicing, the tray may not open normally. Accordingly, be sure to set the gear correctly.



Four gear holes

ADJUSTMENT

Laser power set

Laser power when playing high reflectance disc (PIT) and low reflectance (GROOVE) depends on D.TYPE switch (S1). When recording, laser power depends on TOC information.

Mode	APC REF (IC1 20pin)	Laser power	D.type SW (S1)
High reflectance disc (playback)	0.18V	0.34mW	ON
Low reflectance disc (playback)	0.35V	0.68mW	OFF
Recordable disc (recording) min.	1.73V	3.4mW	OFF
Recordable disc (recording) max.	3.27V	6.8mW	Laser power depends on TOC

Control by μ-com

RF switches are set by the kind of disc and track.

RFSW1 (1 : Track is PIT, 0 : Track is GROOVE)

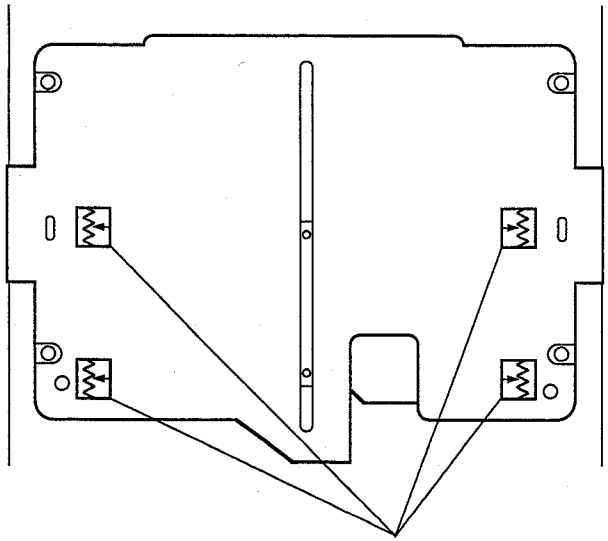
RFSW0 (1 : High reflectance disc, 0 : Low reflectance disc)

Mode	RFSW1 (IC1 38pin)	RFSW0 (IC1 37pin)
Groove area of recordable disc	0	0
PIT area of recordable disc	1	0
High reflectance disc (Premastered)	1	1

Adjustment of Tray Gear

Stop the tray at the center as shown below while it is opening or closing, then adjust the gear position so that all the arrows can be seen at the center through the four holes (on the top).

The gear of the tray does not go out of the position during the normal opening operation. If only one tooth of it is shifted, however, during servicing, the tray may not open normally. Accordingly, be sure to set the gear correctly.



Four gear holes

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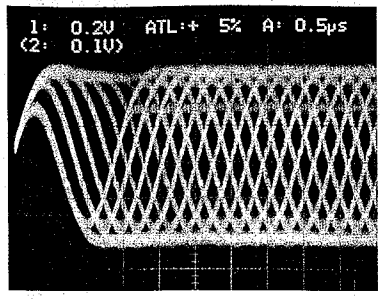
ADJUSTMENT

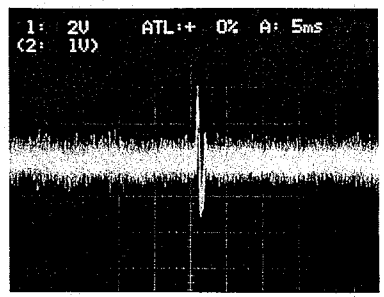
Waveforms

Premastered disc (playback disc)

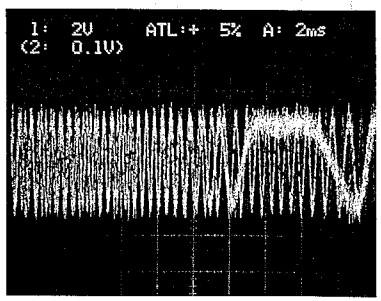
• Eye pattern



• Tracking error

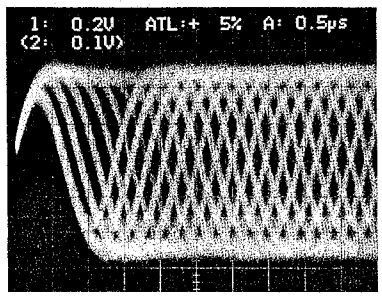


• Tracking error balance

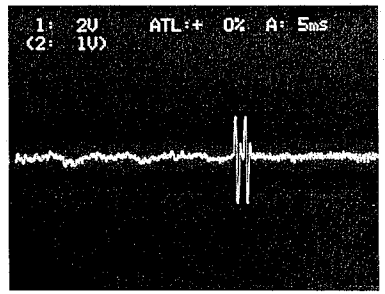


Premastered disc (Recording disc)

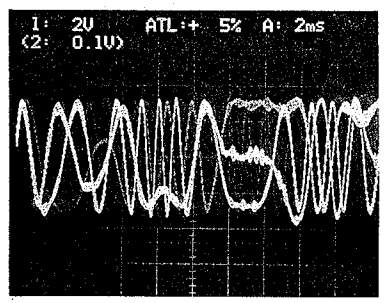
• Eye pattern



• Tracking error

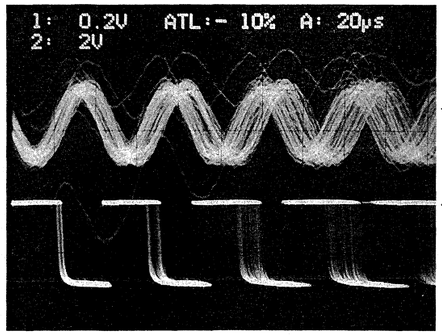


• Traking error balance

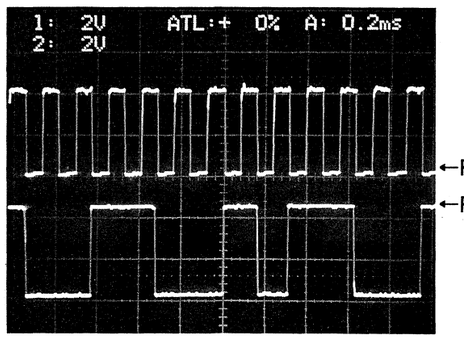


ADJUSTMENT

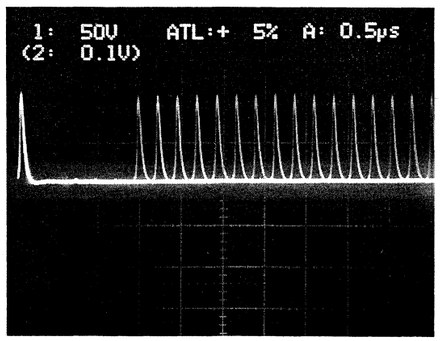
• **ADIP signal ① (Recordable disc only)**



• **ADIP signal ② (Recordable disc only)**



•**Recording head (CN3)**



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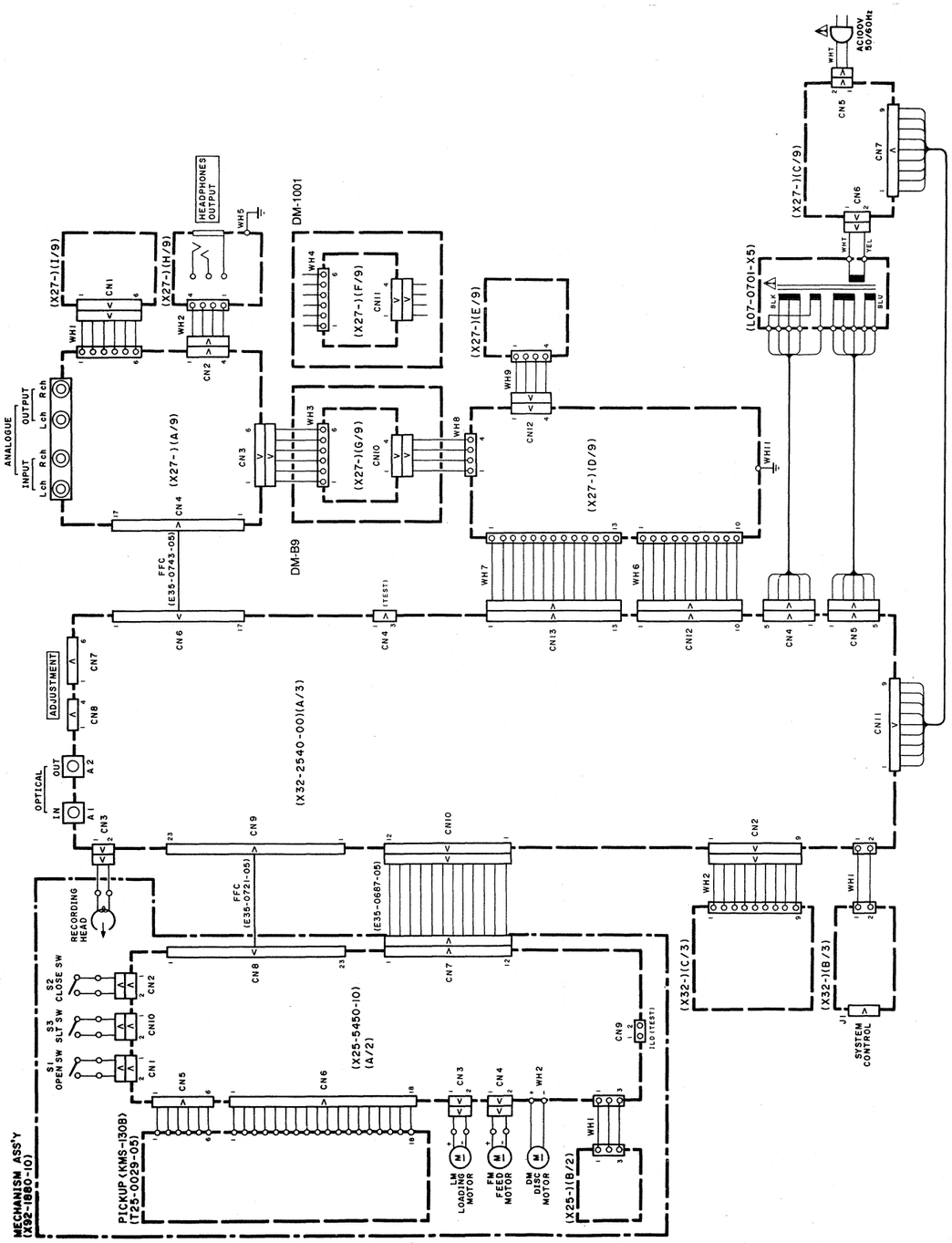
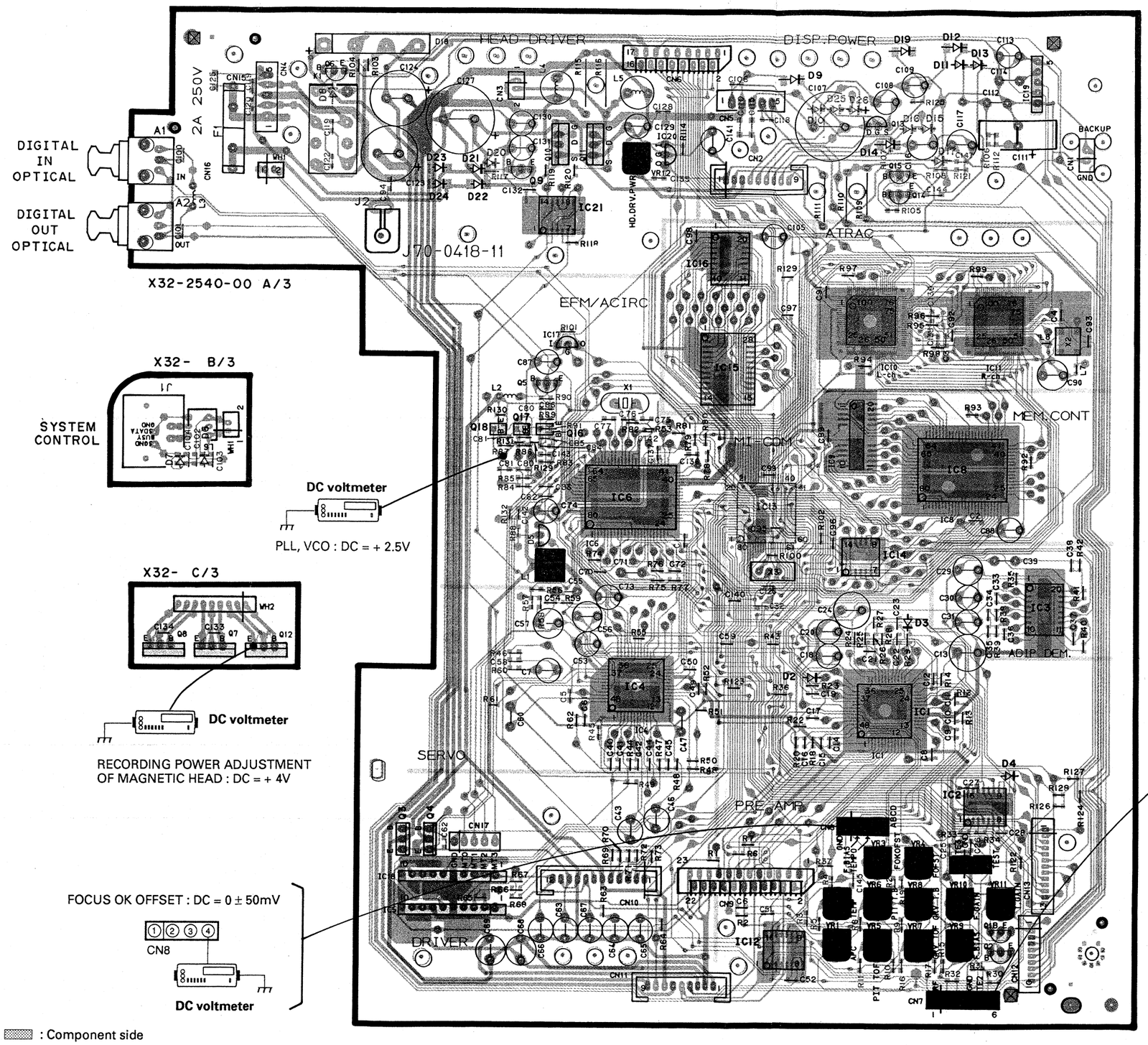
WIRING DIAGRAM



PC BOARD (COMPONENT SIDE VIEW)

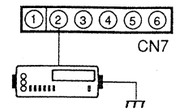


: Component side

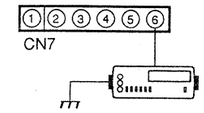
: Foil side

Refer to the schematic diagram for the values of resistors and capacitors.

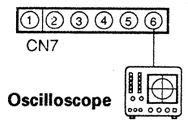
FOCUS OFFSET : DC = 0 ± 50mV



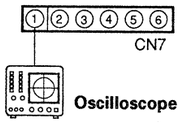
PIT TRACKING OFFSET and
GROOVE TRACKING OFFSET: DC = 0 ± 50mV



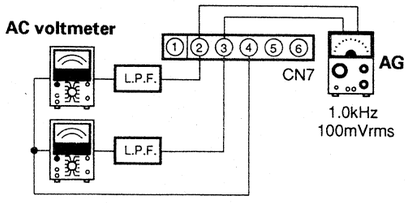
PIT TRACKING BALANCE and
GROOVE TRACKING BALANCE
: Symmetry between upper or lower or DC = ± 0.1V



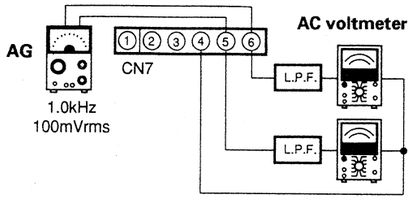
FOCUS BIAS : Eye pattern is at maximum and best.



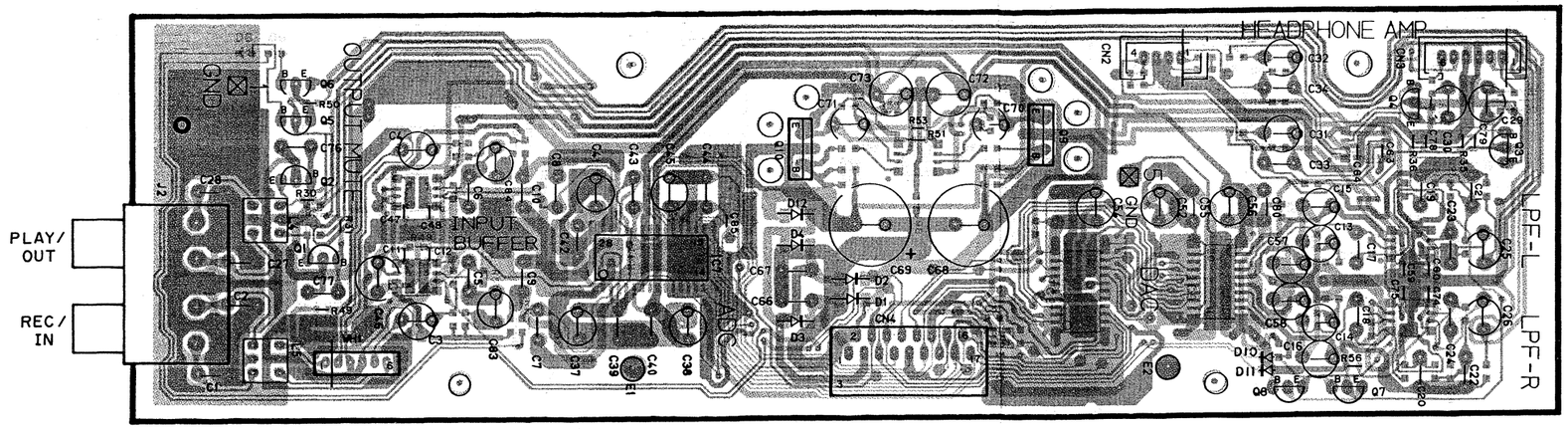
FOCUS GAIN : Two VTVMs should read the same value.



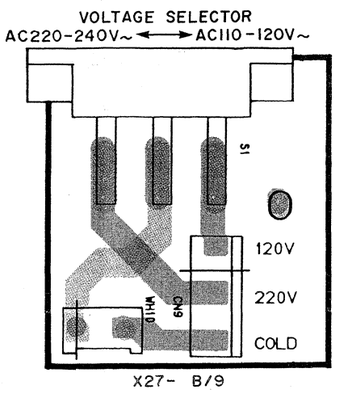
TRACKING GAIN : Two VTVMs should read the same value.



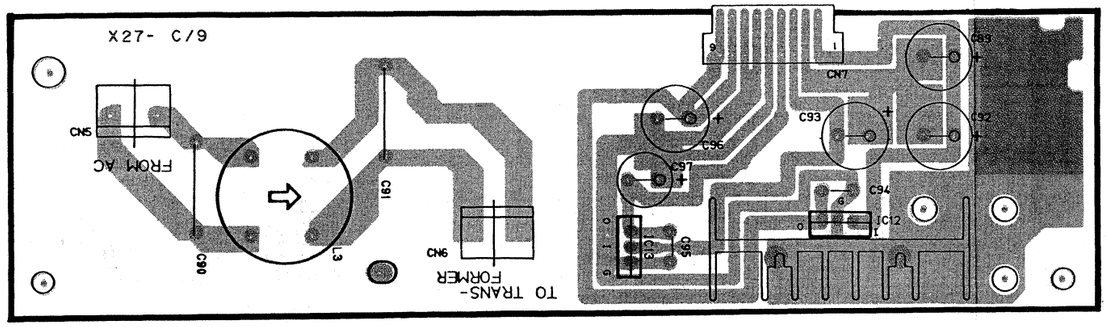
PC BOARD (COMPONENT SIDE VIEW)

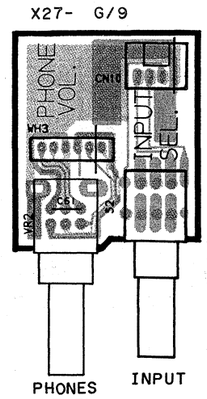


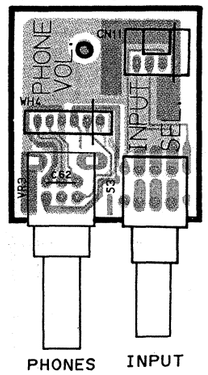
X27-1660-00 A/9

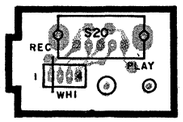


X27- B/9

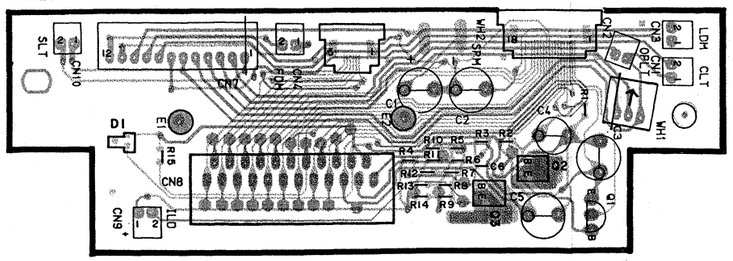


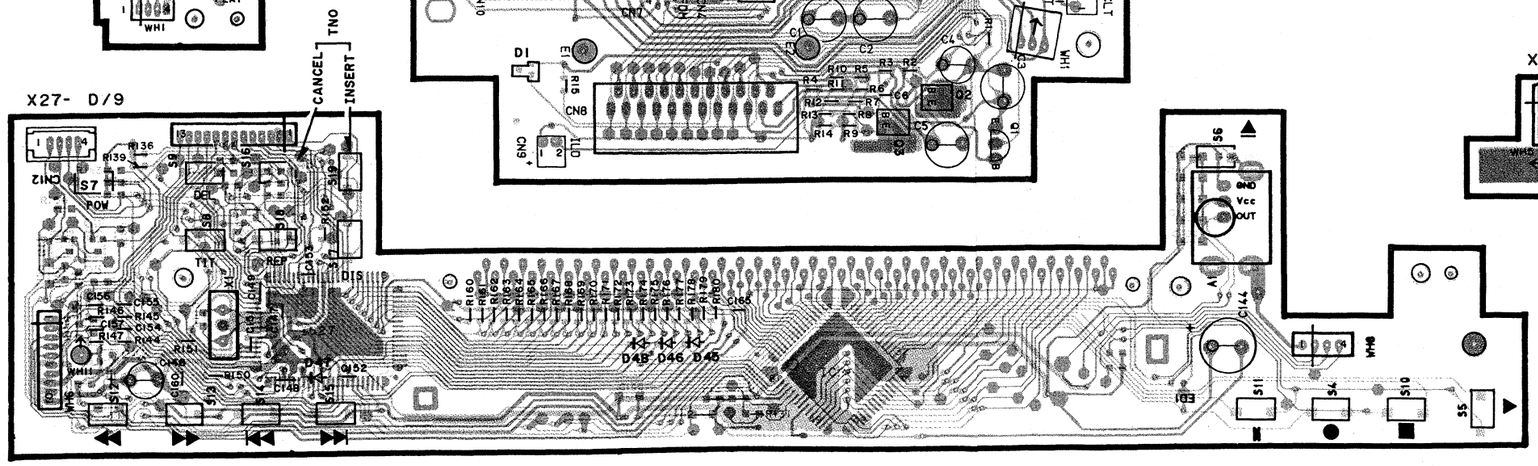


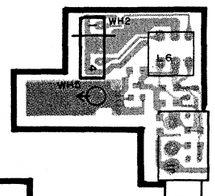


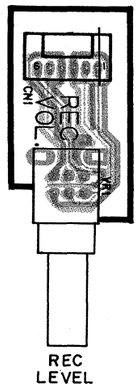


X27- E/9







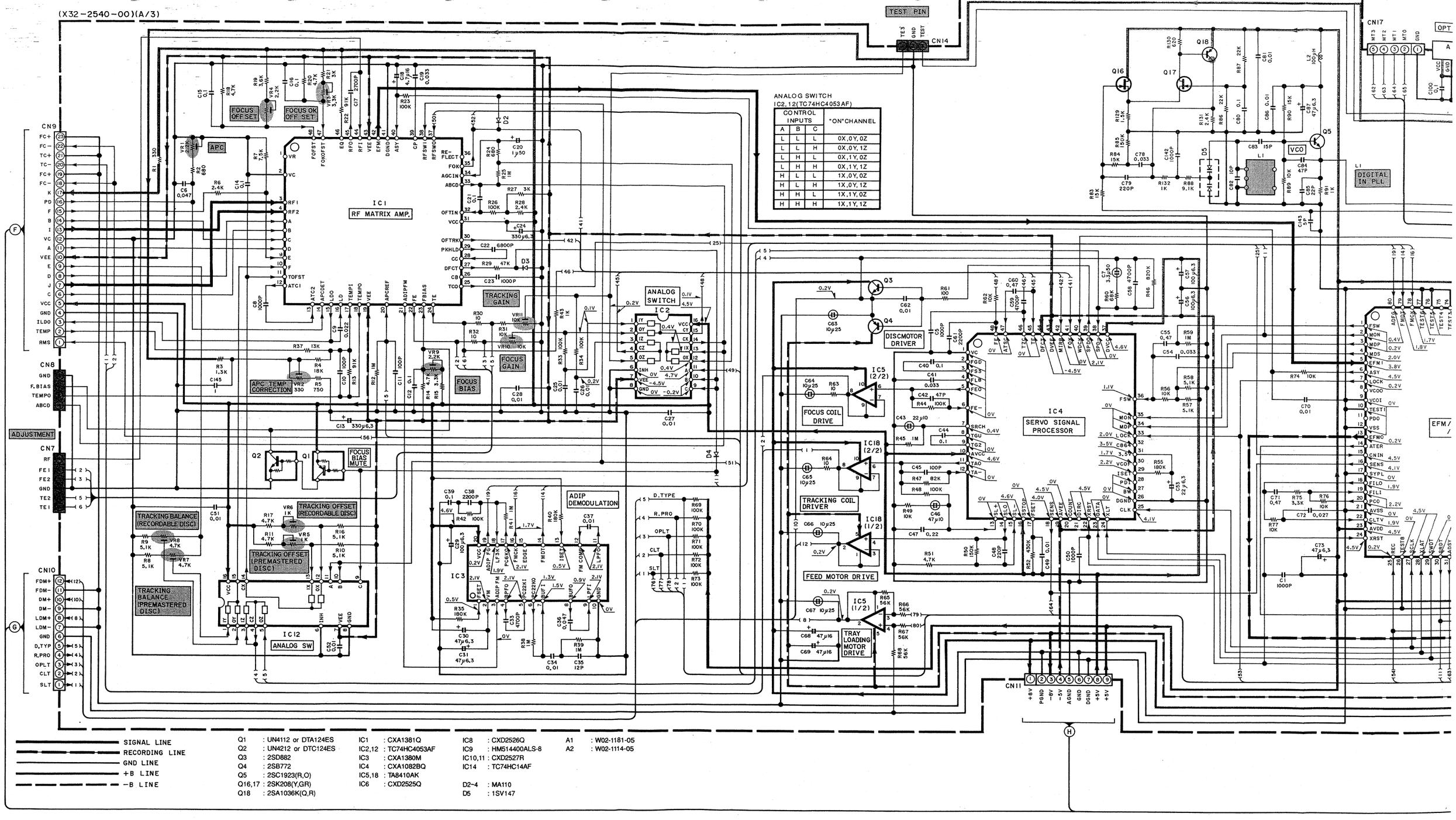


: Component side

: Foil side

Refer to the schematic diagram for the values of resistors and capacitors.

(X32-2540-00)(A/3)



Q1 : UN4112 or DTA124ES
Q2 : UN4212 or DTC124ES
Q3 : 2SD882
Q4 : 2SB772
Q5 : 2SC1923(R,O)
Q16,17 : 2SK208(Y,GR)
Q18 : 2SA1036K(Q,R)

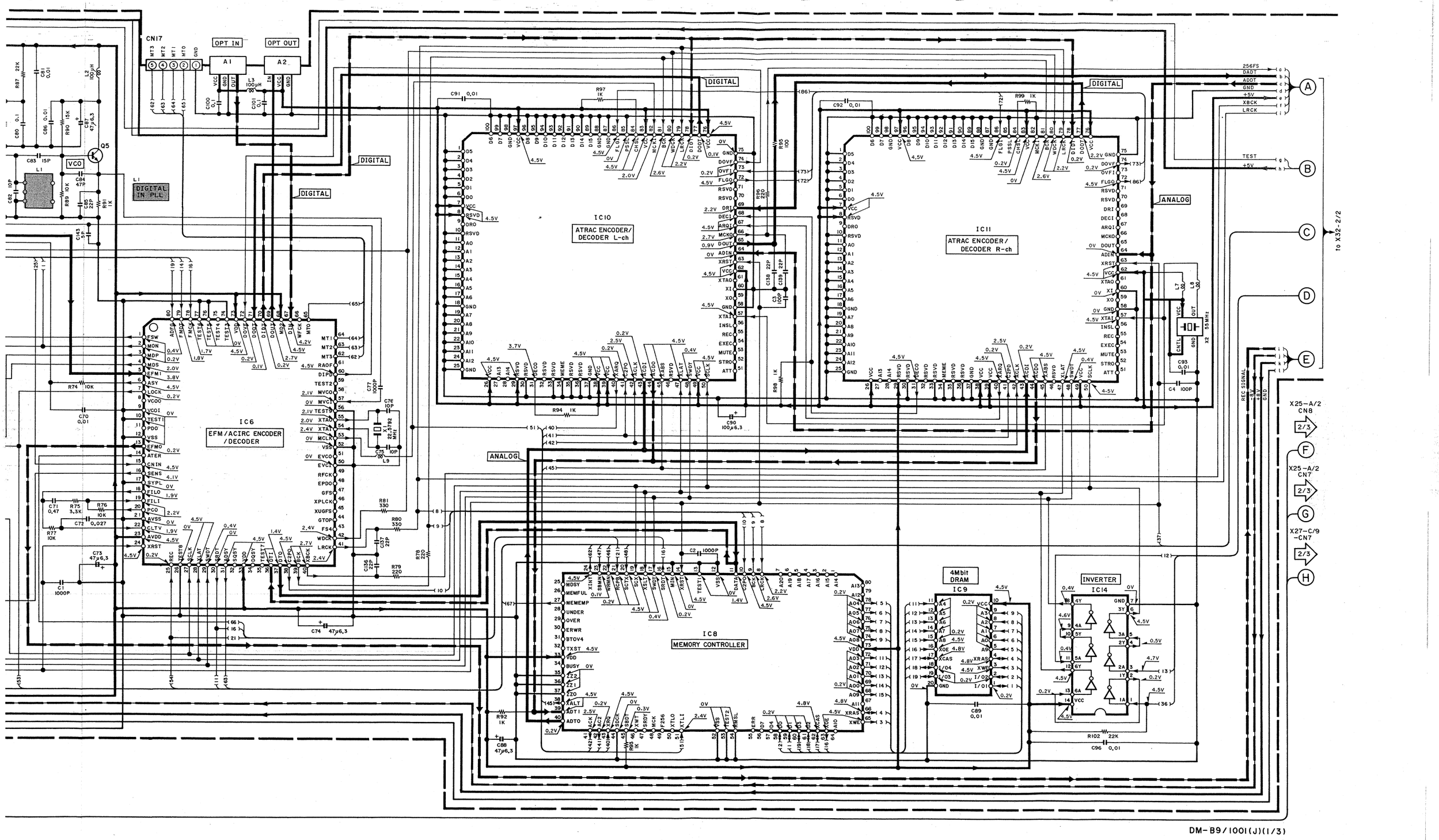
IC1 : CXA1381Q
IC2,12 : TC74HC4053AF
IC3 : CXA1380M
IC4 : CXA1082BQ
IC5,18 : TA8410AK
IC6 : CXD2525Q
IC8 : CXD2526Q
IC9 : HM514400ALS-8
IC10,11 : CXD2527R
IC14 : TC74HC14AF

D2~4 : MA110
D5 : 1SV147

A1 : W02-1181-05
A2 : W02-1114-05

CAUTION : For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

- DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.



DM-B9/1001(J)(1/3)

Y22-3412-71

DM-1001/B9

KENWOOD

X32-A/3 CN9 1/3 F

(X32-2540-00)(A/3)

CN6: LRCK, XBCK, GND, ADDT, DADT, GND, 256Fs, EMPH, GND, XRST, ADCAL, MUTE, CE, +5V, AC, ACGND, AC

CN13: SIN, SREQ, RD OK, LEVEL, L/R, SDATA, BUSY, CS, MREQ, RECPLS, DIG/ANA, MCE, TEST

A: LRCK, XBCK, GND, ADDT, DADT, 256FS, +5V

B: TEST, +5V

C

D

E

F

G

H

(X32-)(B/3)

WH1: SDATA, BUSY

J1: GND, S DATA, BUSY, S GND — SYSTEM CONTROL

L6

C102 100P, C103 100P, D6, D7

R124 47K

(M) TYPE

X32-A/3 CN4: AC12V, AC8V, GND, AC8V, AC12V — BLK

X32-A/3 CN5: AC8V, GND, AC8V, AC5V, AC5V — BLU

(X27-)(B/9)

CN9: 120V, 220V, COLD

S1: AC 110~120V / AC 220~240V

WH10 → to X27 C/9 CN6

SGND J2

IC13 MAIN μ-COM

X3 5MHz, R100 100K

R127 47K, C126 330P, C32 0.01, R36 1K, R122 1K, C95

R128 47K, C140 100P, R123 330

C99, C144, R101 2.2K

RESET IC17

C98 0.01, R126 47K

IC15 256k bit SRAM

IC16 8bit LATCH

Q15, Q14, R105 4.7K

C105 47μ6.3, C97 0.01

MAIN μ-COM POWER SW

C94 0.1

POWER RELAY DRIVE

+6.2V AVR: Q9, C131 100μ10, D20, C130 10μ35, R117 3K, C127 3300μ16, D21, D22, D24, D23

Q6, D8, K1, D19, R104 4.7K, R103 4.7K

HEAD DRIVE POWER

POWER CONTROL: VR12 22K, R113 4.7K, R114 22K, IC20, C128 0.01, C129 0.01, C116 47μ16, R111 390 1W, C132 0.1

RECORDING HEAD DRIVE: Q11, Q10, L5 220μH, R116 180 2W, R115 180 2W, L4 220μH, C129 100μ10, R119 10, R120 10

IC21

RECORDING EFM SW

CN16, CN15, F1 2A 250V

CN3, CN4

C111 BACKUP

D18, C123 2200μ16, C124 2200μ16, C121 0.01, C122 0.01, C119 0.1, C120 0.1

IC7, IC19 RESET, D12, R112 220, R106 100, C111 1, C112 0.1, C113 47μ6.3, C114 0.33, R53 1K, R54 3.3K

+5V AVR: Q13, C107 3300μ16, D25, D10 D26, C108 10μ10, C109 47μ6.3

D14, D15, D16, R107 3K, C116 47μ50, C117 47μ50, R121 2.1K, R108 2.1K, D17, C118 0.1, R109 180 1W, R110 180 1W

D9, C106 0.1

CN1: GND, BACKUP

CN2, CN5, CN12

WH2

+4V AVR: Q12, Q7, C133 100P

+5V AVR

-30V AVR: C134 47μ16, Q8

(X32-)(C/3)

X32-A/3 CN10 1/3

X32-A/3 CN11 1/3

SIGNAL LINE
RECORDING LINE
GND LINE
+B LINE
−B LINE

D8	: MA113	D6,7,25,26	: MA110	Q10,11	: IRF610	IC7	: S-80740AL-A4	IC20	: TL431CLP
D9,12,14,19,21~24	: U1BC44			Q12	: 2SD1944	IC13	: μPD78P054GC	IC21	: TC74HC02AF
D10,17	: DTZ5.1(B)	Q6	: 2SC3246	Q13	: 2SK163(L)	IC15	: HM62256ALFP-12T		
D15,16	: DTZ15(B)	Q7	: 2SD2012	Q14	: DTC124ES or UN4212	IC16	: TC74HC373AF		
D18	: D3SBA20F03	Q8	: 2SB1375	Q15	: 2SA1534A(R,S)	IC17	: PST529F		
D20	: DTZ6.8(B)	Q9	: 2SC3311A(Q,R) or 2SC2458(Y,GR)			IC19	: M62005L		

MECHANISM ASS'Y (X92-1880-10)

PICKUP (KMS-130B)
(T25-0029-05)

TWO SHAFT ACTUATOR DRIVE

DISC

OBJECT LENS

FRONT MONITOR PD

LD

HIGH FREQUENCY ADDITION CIRCUIT

PHOTO DIODE

HEAD AMP

PDIC

CN5 CN8 CN6

FC+ FC- TC+ TC- FC+ FC- K PD F B I VC A VEE E D J C VCC GND LDO TEMP RMS

FC- FC- TC+ TC- FC+ FC+

K VR PD F B I A VEE VC E D J C VCC GND ILCC VMOD RMS

F B I A VEE VC E D J C VCC

C1 100µ6.3
C2 100µ6.3

X27-A/9 CN4 3/3 (I)

X27-D/9 WH7 3/3 (J)

ADDITION CIRCUIT ON/OFF

ADDITION CIRCUIT POWER SUPLLY

LASER DRIVER

D1 R10 2.2K

Q2 R4 100K R3 150

Q1 4.3V 0V

Q3 C6 1200P

R1 10K R2 1K C3 100µ6.3 C4 47µ6.3 C5 100p 6.3

R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 39

5.0V 4.2V

CN9 VCC ILD (TEST)

(X25-5450-10) (A/2)

D1 : DA204U

Q1 : UN4116
Q2 : 2SD1963(R,S)
Q3 : 2SB1308(Q,R)

(X25-)(B/2)

S1 DISC TYPE (PREMASTERED DISC:ON) REC PROTECT (PROTECT:ON)

WH1 GND R.PRO D.TYPE

RECORDING HEAD (T30-0010-05) (RF320-74V)

FM FEED MOTOR CN4 FDM- FDM+

DM DISC MOTOR WH2 SPM+ SPM-

LM LOADING MOTOR CN3 LDM- LDM+

Ref.No.81 OPEN SW CN2 OPLT

Ref.No.82 CLOSE SW CN1 CLT

Ref.No.80 SLT SW CN10 SLT

CN7 SLT CLT OPLT R.PRO D.TYPE GND LDM- LDM+ DM- DM+ FDM- FDM+

X27-D/9 WH6 3/3 (K)

(G) (M)

IC12 : LM2940CT-5.0
IC13 : µPC7905HF
or TA79005S

(X27-1660-00)(C/9)

IC12 5V AVR 5.0V

IC13 -5V AVR -5.0V

CN7 +5V +5V DGND GND AGND -5V -8V GND +8V

C89 1000µ16 C92 1000µ16 C94 0.1 C96 1000µ10
C93 470µ16 C95 0.1 C97 470µ10

(K,P,X,T,E type)

AC12V AC8V GND AC8V AC12V BLK

AC8V GND AC8V AC5V AC5V BLU

CN6 WHT YEL

L3

C91 0.01µ 250 C90 0.01µ 250

CN5 WHT AC100V 50/60Hz

(H)

/9)

AC 220~240V

S1

WH10 to X27 C/9 CN6

IC19 RESET GND INT RST Od VDD

C111 IF 5.5 C112 0.1 C113 47µ6.3 C114 0.33 4.7V

R101 5.1K R102 5.1K R103 180 1W R110 180 1W C118 0.1

4.5V 4.7V -30.0V

D17

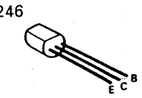
CN1 GND BACKUP

CN5 CN12 SOUT SCK AC AC -30V CE RST GND POWER +5V

AC5V

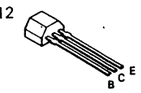
DM-B9/1001(J)(2/3)

2SA1534A 2SC1923 2SC2878 2SC3246



2SB772 2SD882

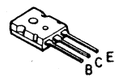
DTA124ES UN4116 DTC124ES 2SC2458 UN4112



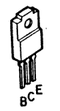
DTA124EU 2SA1036K 2SC4081

2SB1308

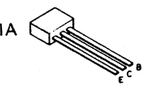
2SD1963



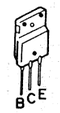
2SB1370 2SD1944 2SD2061



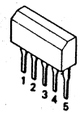
UN4212 UN4219 2SC3311A



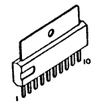
2SB1375 2SD2012



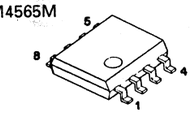
M62005L



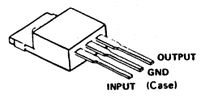
TA8410AK



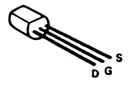
NJM4558M NJM4565M



LM2940CT-5.0



2SK163



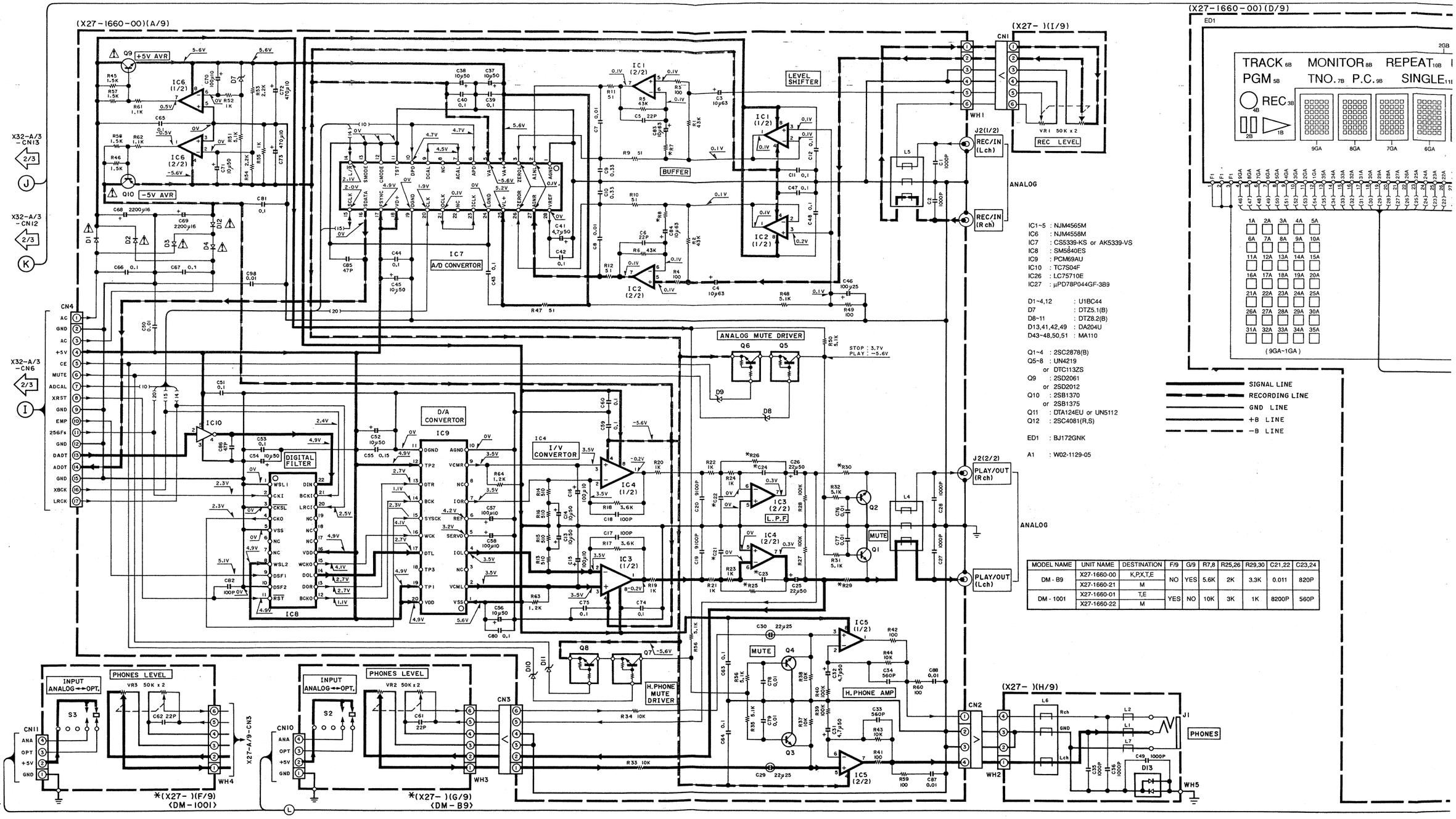
CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

- DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

Y22-3412-71

DM-1001/B9

KENWOOD



IC1~5 : NJM4565M
IC6 : NJM4558M
IC7 : CS5339-KS or AK5339-VS
IC8 : SM5840ES
IC9 : PCM69AU
IC10 : TC7S04F
IC26 : LC75710E
IC27 : μPD78P044GF-3B9

D1~4,12 : U1BC44
D7 : DTZ5.1(B)
D8~11 : DTZ8.2(B)
D13,41,42,49 : DA204U
D43~48,50,51 : MA110

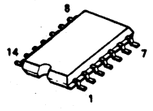
Q1~4 : 2SC2878(B)
Q5~8 : UN4219
or DTC113ZS
Q9 : 2SD2061
or 2SD2012
Q10 : 2SB1370
or 2SB1375
Q11 : DTA124EU or UN5112
Q12 : 2SC4081(R,S)

ED1 : BJ172GNK

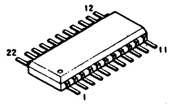
A1 : W02-1129-05

MODEL NAME	UNIT NAME	DESTINATION	F/9	G/9	R7,8	R25,26	R29,30	C21,22	C23,24
DM - B9	X27-1660-00	K,P,X,T,E	NO	YES	5.6K	2K	3.3K	0.011	820P
	X27-1660-21	M							
DM - 1001	X27-1660-01	T,E	YES	NO	10K	3K	1K	8200P	560P
	X27-1660-22	M							

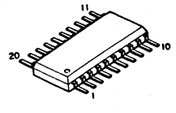
M5223FP
TC74HC02AF
TC74HC14AF



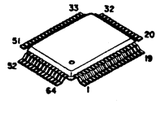
SM5840ES



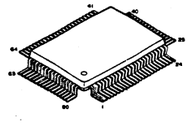
CXA1380M
PCM69AU



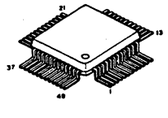
LC75710E



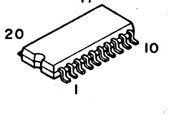
CXD2525Q
CXD2526Q



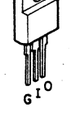
CXA1082BQ
CXA1381Q



TC74HC373AF



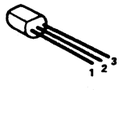
UPC7905HF



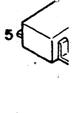
TA79005S

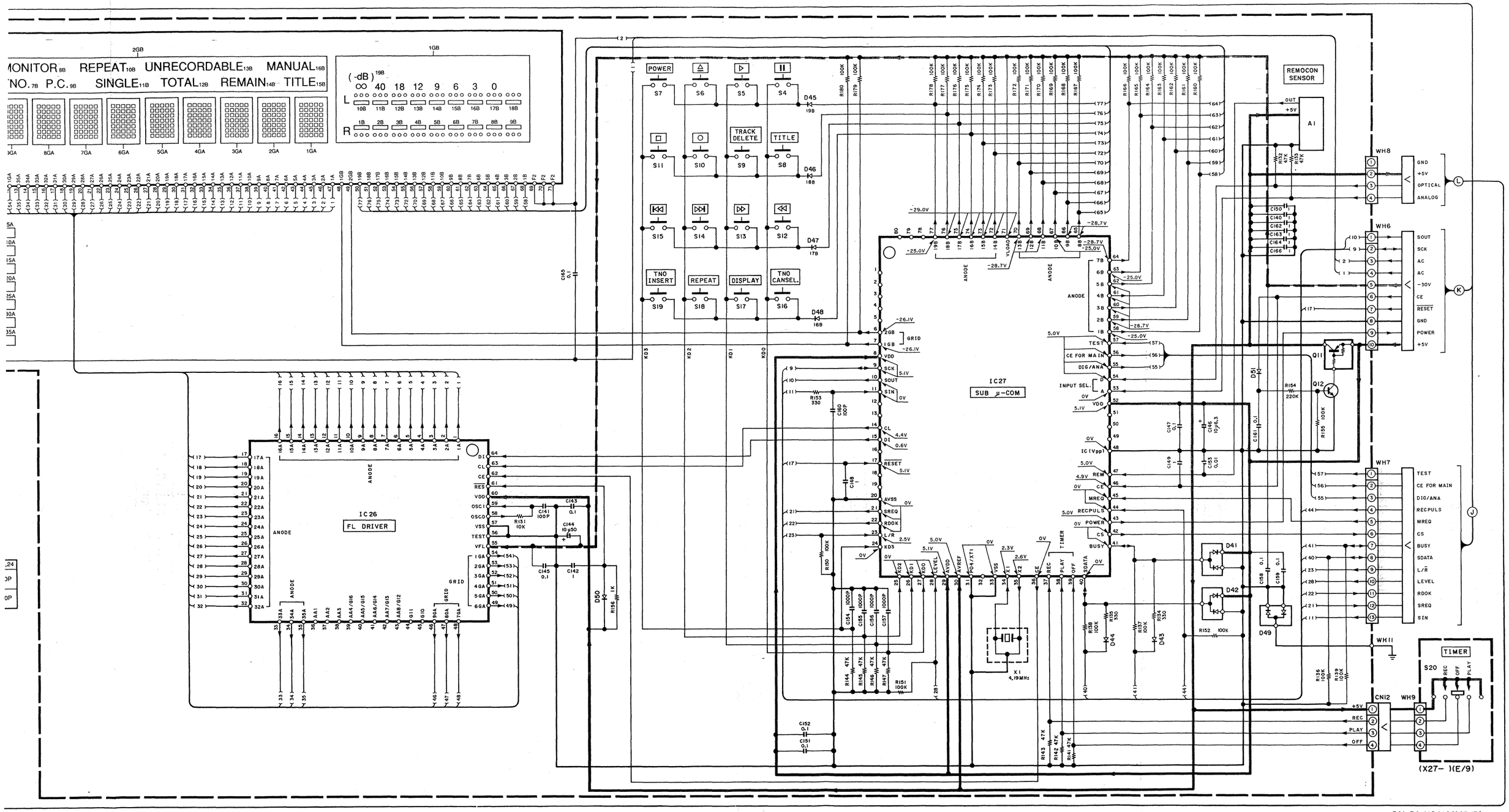
TL431CLP

PST529F



TC7S04F

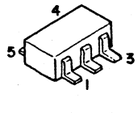




DM-B9/1001(J)(3/3)

529F

TC7S04F



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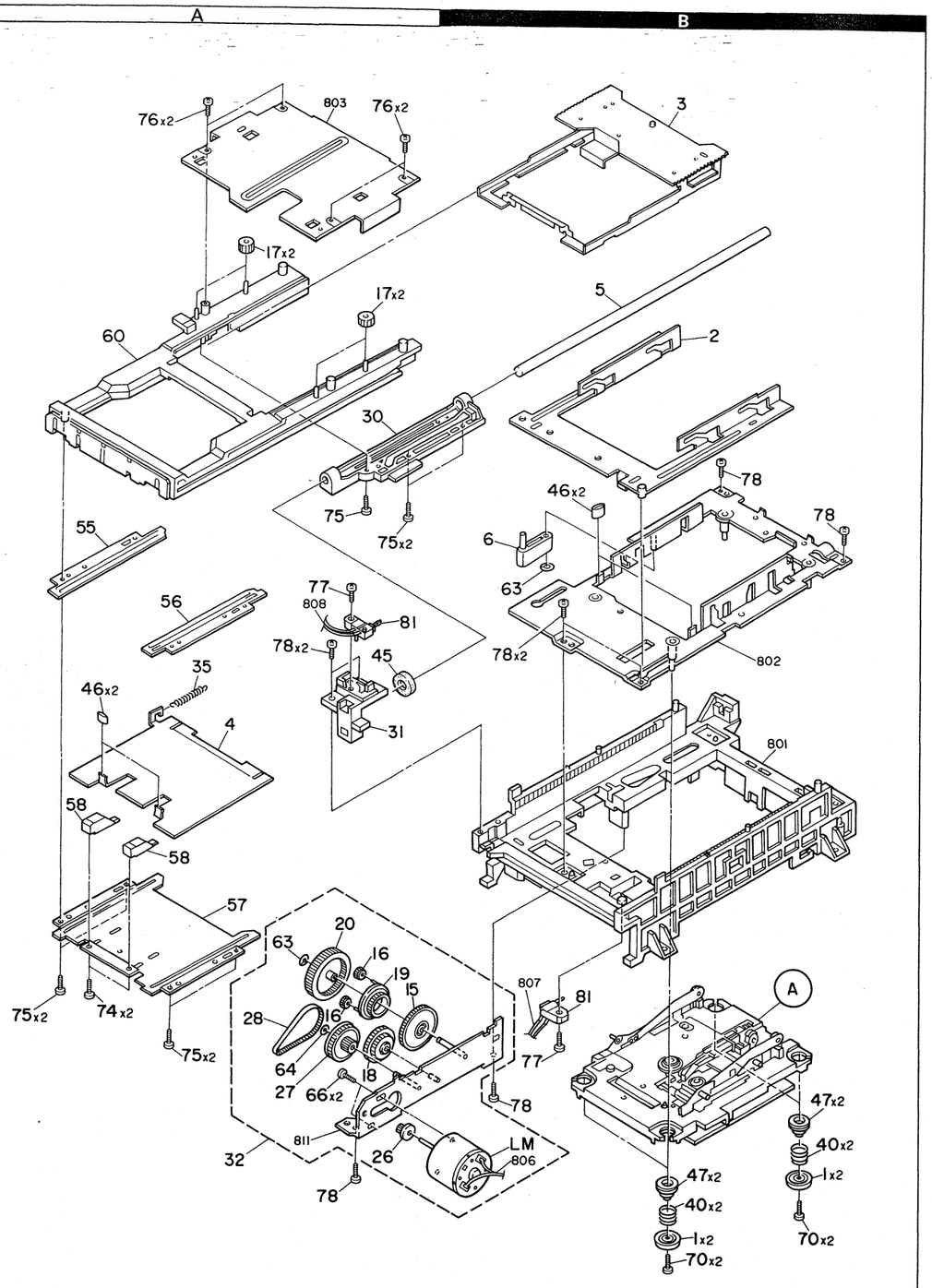
Y22-3412-71

DM-1001/B9

KENWOOD

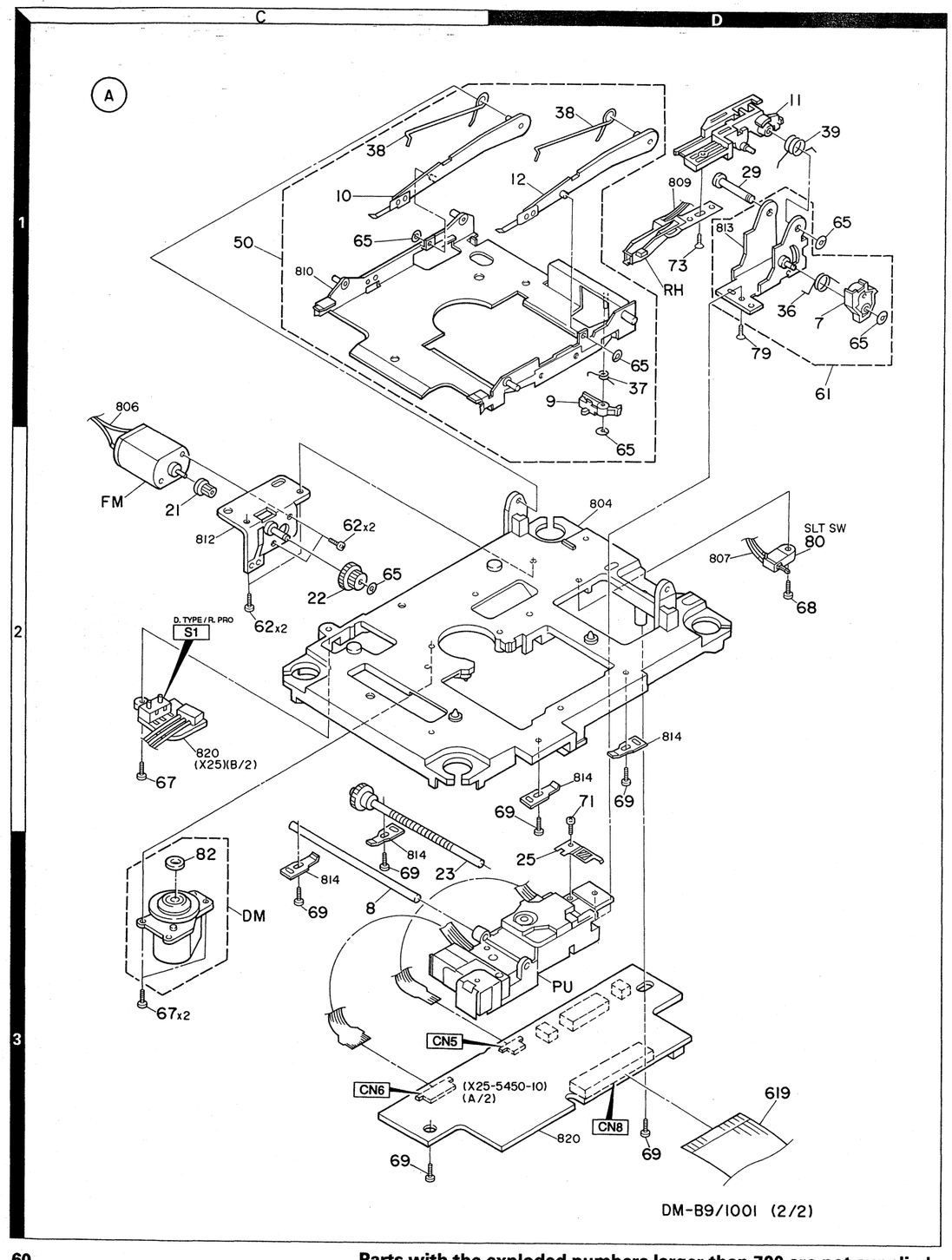
EXPLODED VIEW (MECHANISM)



Parts with the exploded numbers larger than 700 are not supplied.

DM-1001/B9

EXPLODED VIEW (MECHANISM)



Parts with the exploded numbers larger than 700 are not supplied.

EXPLODED VIEW (UNIT) : DM-1001

Parts with the exploded numbers larger than 700 are not supplied.

EXPLODED VIEW (UNIT) : DM-B9

A φ3x8 :N89-3008-46
B φ3x8 BLK :N89-3008-45
C φ4x8 BLK :N89-4008-45
D φ3x8 :N09-0295-05
E φ2.6x8 :N82-2608-45
F φ3x6 BLK :N09-2896-05
G :N29-0265-15
H φ3x6 :N89-3006-46

Parts with the exploded numbers larger than 700 are not supplied.

※ New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

❶

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名/規格	Destination 仕向	Remarks 備考
DM-1001						
601	1E	*	A01-3096-11	METALLIC CABINET		
602	1E	*	A09-0160-08	BATTERY COVER		
604	3E	*	A29-0361-04	PANEL ASSY (TRAY)		
605	3F	*	A60-0463-12	PANEL ASSY (FRONT)		
606	1E	*	A70-0938-05	REMOTE CONTROL UNIT(RC-DMB9)		
607	3E	*	A29-0359-04	PANEL (TRAY)		
608	3E	*	A60-0464-02	PANEL (FRONT)		
611	3E	*	B10-1993-04	FRONT GLASS		
612	3E	*	B11-0269-04	COLOR FILTER		
613	1E	*	B19-1529-05	OPTICAL FIBER CABLE		
-		*	B46-0310-03	WARRANTY CARD	TE	
-		*	B60-1276-00	INSTRUCTION MANUAL(ENGLISH)		
-		*	B60-1278-00	INSTRUCTION MANUAL(SPANISH)	M	
-		*	B60-1279-00	INSTRUCTION MANUAL(DUT,ITA)	E	
-		*	B60-1368-00	INSTRUCTION MANUAL(GER,FRE)	E	
-		*	B60-1606-00	INSTRUCTION MANUAL(CHINESE)	M	
⚠ 614	1E		E03-0115-05	AC PLUG ADAPTOR	M	
615	1E		E30-2600-05	AUDIO CORD		
616	1E		E30-2628-05	SYSTEM CONTROL CORD		
⚠ 617	1H		E30-2592-15	AC POWER CORD	ME	
⚠ 617	1H		E30-2721-05	AC POWER CORD	T	
619	1G	*	E35-0721-05	FLAT CABLE (23P,L=180)		
620	2H	*	E35-0743-05	FLAT CABLE (17P,L=80)		
621	3E	*	G01-3642-04	TORSION COIL SPRING		
623	2F	*	G10-0154-04	NON-WOVEN FABRIC		
625	3G		G11-2069-04	CUSHION		
626	2G		G11-2126-04	SOFT TAPE		
-		*	H10-5534-12	POLYSTYRENE FOAMED FIXTURE(L)		
-		*	H10-5535-12	POLYSTYRENE FOAMED FIXTURE(R)		
-		*	H11-0054-04	POLYSTYRENE FOAMED BOARD		
-		*	H12-2193-04	PACKING FIXTURE	T	
-			H20-0577-04	PROTECTION COVER	M	
-		*	H21-0301-14	PROTECTION SHEET		
-			H25-0232-04	PROTECTION BAG (235X350X0.03)	ME	
-			H25-0397-04	PROTECTION BAG	E	
-			H25-0651-04	PROTECTION BAG (0232 PRINTED)	T	
-			H25-0659-04	PROTECTION BAG (0397 PRINTED)	T	
-		*	H50-0844-04	ITEM CARTON CASE	T	
-		*	H50-0933-04	ITEM CARTON CASE	ME	
631	3H		J02-0127-05	FOOT (REAR)		
632	3G		J02-0130-05	FOOT (FRONT)		
633	1G		J19-3208-05	UNIT HOLDER		
635	3H	*	J30-0296-04	SPACER		
⚠ 636	1H		J42-0083-05	POWER CORD BUSHING		
-			J61-0307-05	WIRE BAND		
641	3F	*	K29-5786-04	KNOB (INPUT,PHONES LEVEL)		
644	3F		K29-5757-04	KNOB (REC LEVEL)		
⚠ 645	2H	*	L07-0703-15	POWER TRANSFORMER	M	
⚠ 645	2H	*	L07-0704-15	POWER TRANSFORMER	TE	

L:Scandinavia K:USA P:Canada R:Mexico
Y:PX (Far East, Hawaii) T:England E:Europe G:Germany
Y:AAFES (Europe) X:Australia M:Other Areas

⚠ indicates safety critical components.

※ New Parts
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❷

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名/規格	Destination 仕向	Remarks 備考
A			N89-3008-46	BINDING HEAD TAPTITE SCREW		
B			N89-3008-45	BINDING HEAD TAPTITE SCREW		
C			N89-4008-45	BINDING HEAD TAPTITE SCREW		
D			N09-0295-05	HEXAGON HEAD BOLT(M3X8,+)		
E			N82-2608-46	BINDING HEAD TAPTITE SCREW		
F			N09-1445-05	SET SCREW (M3X8)		
G			N09-3023-05	MACHINE SCREW (3 X 8)		
H			N32-2605-46	FLAT HEAD MACHIN SCREW		
J			N35-2606-46	BINDING HEAD MACHINE SCREW		
K			N89-3010-45	BINDING HEAD TAPTITE SCREW		
L		*	N29-0265-15	PUSH RIVET		
M			N35-2603-46	BINDING HEAD SCREW		
N			N89-3006-46	BINDING HEAD TAPTITE SCREW		
DM-B9						
601	1I	*	A01-3099-11	METALLIC CABINET		
602	1I		A09-0160-08	BATTERY COVER		
603	3I	*	A21-1834-03	DRESSING PANEL		
604	3I	*	A29-0364-14	PANEL ASSY (TRAY)		
605	2I	*	A60-0496-22	PANEL ASSY (FRONT)		
606	1I	*	A70-0938-05	REMOTE CONTROL UNIT(RC-DMB9)		
607	3I	*	A29-0342-01	PANEL (TRAY)		
611	2J	*	B10-1964-03	FRONT GLASS		
612	3I	*	B11-0270-04	COLOR FILTER		
613	1I	*	B19-1529-05	OPTICAL FIBER CABLE		
-			B46-0092-33	WARRANTY CARD	K	
-			B46-0096-43	WARRANTY CARD	X	
-			B46-0121-33	WARRANTY CARD	P	
-			B46-0310-03	WARRANTY CARD	TE	
-		*	B52-0543-00	CONNECTING DIAGRAM		
-		*	B60-1190-00	INSTRUCTION MANUAL(ENGLISH)		
-		*	B60-1191-00	INSTRUCTION MANUAL(FRENCH)	PE	
-		*	B60-1192-00	INSTRUCTION MANUAL(GER,DUT,ITA	E	
-		*	B60-1193-00	INSTRUCTION MANUAL(CHI,ALA)	M	
-		*	B60-1605-00	INSTRUCTION MANUAL(SPANISH)	M	
⚠ 614	1I		E03-0115-05	AC PLUG ADAPTER	M	
615	1I		E30-0615-05	AUDIO CORD		
616	1I		E30-2628-05	SYSTEM CONTROL CORD		
⚠ 617	1L		E30-2592-15	AC POWER CORD	ME	
⚠ 617	1L		E30-2650-05	AC POWER CORD	KP	
⚠ 617	1L		E30-2717-05	AC POWER CORD	X	
⚠ 617	1L		E30-2721-05	AC POWER CORD	T	
619	1K	*	E35-0721-05	FLAT CABLE (23P,L=180)		
620	2L	*	E35-0743-05	FLAT CABLE (17P,L=80)		
621	3I	*	G01-3643-04	TORSION COIL SPRING		
624	3J,3L		G11-2052-14	CUSHION (FOOT)		
625	3K		G11-2069-04	CUSHION		
626	2K		G11-2126-04	SOFT TAPE		
-		*	H10-5510-12	POLYSTYRENE FOAMED FIXTURE(L)		
-		*	H10-5511-12	POLYSTYRENE FOAMED FIXTURE(R)		
-			H11-0058-14	POLYSTYRENE FOAMED FIXTURE	X	
-		*	H11-0059-04	POLYSTYRENE FOAMED BOARD	KPMTE	
-		*	H12-2193-04	PACKING FIXTURE	T	
-			H13-0114-04	CARTON BOARD	X	

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❸

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-			H20-0577-04	PROTECTION COVER	M	
-		*	H21-0301-14	PROTECTION SHEET		
-			H25-0232-04	PROTECTION BAG (235X350X0.03)	KPMXE	
-			H25-0397-04	PROTECTION BAG	KPXE	
-			H25-0651-04	PROTECTION BAG (0232 PRINTED)	T	
-			H25-0659-04	PROTECTION BAG (0397 PRINTED)	T	
-		*	H50-0659-04	ITEM CARTON CASE	KPMXE	
-		*	H50-0916-04	ITEM CARTON CASE	T	
631	3I,3J		J02-1095-04	FOOT		
633	1K		J19-3208-05	UNIT HOLDER		
634	3J		J30-0299-04	SPACER		
635	3J	*	J30-0297-04	SPACER		
⚠ 636	1L		J42-0083-05	POWER CORD BUSHING		
-			J61-0307-05	WIRE BAND		
641	3J		K29-4377-04	KNOB (INPUT,PHONES LEVEL)		
642	2J	*	K29-5710-03	KNOB (SKIP,SEARCH)		
643	2J	*	K29-5711-03	KNOB (STOP,PLAY)		
644	3I	*	K29-5712-04	KNOB (REC LEVEL)		
⚠ 645	2L	*	L07-0702-15	POWER TRANSFORMER	KP	
⚠ 645	2L	*	L07-0703-15	POWER TRANSFORMER	M	
⚠ 645	2L	*	L07-0704-15	POWER TRANSFORMER	XTE	
A			N89-3008-46	BINDING HEAD TAPTITE SCREW		
B			N89-3008-45	BINDING HEAD TAPTITE SCREW		
C			N89-4008-45	BINDING HEAD TAPTITE SCREW		
D			N09-0295-05	HEXAGON HEAD BOLT(M3X8,+)		
E			N82-2608-45	BINDING HEAD TAPTITE SCREW		
F			N09-2896-05	SET SCREW		
G		*	N29-0265-15	PUSH RIVET		
H			N89-3006-46	BINDING HEAD TAPTITE SCREW		
ELECTRIC UNIT (X25-5450-10)						
C1 -3			C90-3214-05	ELECTRO 100UF 6.3WV		
C4			C90-3212-05	ELECTRO 47UF 6.3WV		
C5			C90-3214-05	ELECTRO 100UF 6.3WV		
C6			CK73FB1H122K	CHIP C 1200PF K		
CN5	3D	*	E40-4692-05	FLAT CABLE CONNECTOR(6P)		
CN6	3C	*	E40-4693-05	FLAT CABLE CONNECTOR(10P)		
CN8	3D		E40-4203-05	FLAT CABLE CONNECTOR(23P)		
S1	2C	*	S68-0031-05	PUSH SWITCH (D.TYPE/R.PRO)		
D1			DA204U	DIODE		
Q1			UN4116	DIGITAL TRANSISTOR		
Q2			2SD1963(R,S)	TRANSISTOR		
Q3			2SB1308(Q,R)	TRANSISTOR		
POWER SUPPLY UNIT (X27-1660-XX) DM-B9 : -00, -21 / DM-1001 : -01, -22						
C1 ,2			CF92FV1H102J	MF 1000PF J		
C3 ,4			CE04KW1J100M	ELECTRO 10UF 63WV		
C5 ,6			CC45FSL1H220J	CERAMIC 22PF J		
C7 ,8			CF92FV1H103J	MF 0.010UF J		
C9 ,10			CF92FV1H334J	MF 0.33UF J		
C11 ,12			CK73FF1E104Z	CHIP C 0.1UF Z		
C13 ,14			CE04KW1H100M	ELECTRO 10UF 50WV		
C15 ,16			CE04KW1A101M	ELECTRO 100UF 10WV		
C17 ,18			CF92FV1H101K	MF 100PF K		

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C19 ,20			CF92FV1H912J	MF 9100PF J		
C21 ,22			CF92FV1H113J	MF 0.011UF J	B9	
C21 ,22			CF92FV1H822J	MF 8200PF J	1001	
C23 ,24			CF92FV1H561J	MF 560PF J	1001	
C23 ,24			CF92FV1H821J	MF 820PF J	B9	
C25 ,26			CE04KW1H220M	ELECTRO 22UF 50WV		
C27 ,28			CF92FV1H102J	MF 1000PF J		
C29 ,30			CE04HW1E220M	NP-ELEC 22UF 25WV		
C31 ,32			CE04KW1H4R7M	ELECTRO 4.7UF 50WV		
C33 ,34			CF92FV1H561J	MF 560PF J		
C35 ,36			CC73FSL1H102J	CHIP C 1000PF J		
C37 ,38			CE04KW1H100M	ELECTRO 10UF 50WV		
C39 ,40			CF92FV1H104J	MF 0.10UF J		
C41			CE04KW1H4R7M	ELECTRO 4.7UF 50WV		
C42 -44			CF92FV1H104J	MF 0.10UF J		
C45			CE04KW1H100M	ELECTRO 10UF 50WV		
C46			CE04KW1E101M	ELECTRO 100UF 25WV		
C47 ,48			CK73FF1E104Z	CHIP C 0.1UF Z		
C49			CC73FSL1H102J	CHIP C 1000PF J		
C50			CK73FB1H103K	CHIP C 0.010UF K		
C51			CK73FF1E104Z	CHIP C 0.1UF Z		
C52			CE04KW1H100M	ELECTRO 10UF 50WV		
C53			CF92FV1H104J	MF 0.10UF J		
C54			CE04KW1H100M	ELECTRO 10UF 50WV		
C55			CF92FV1H154J	MF 0.15UF J		
C56			CE04KW1H100M	ELECTRO 10UF 50WV		
C57 ,58			CE04KW1A101M	ELECTRO 100UF 10WV		
C59 ,60			CK73FF1E104Z	CHIP C 0.1UF Z		
C61			CC45FSL1H220J	CERAMIC 22PF J	B9	
C62			CC45FSL1H220J	CERAMIC 22PF J	1001	
C63 ,64			CK73FF1E104Z	CHIP C 0.1UF Z		
C65 -67			CF92FV1H104J	MF 0.10UF J		
C68 ,69			CE04KW1C222M	ELECTRO 2200UF 16WV		
C70			CE04KW1A101M	ELECTRO 100UF 10WV		
C71			CE04KW1H100M	ELECTRO 10UF 50WV		
C72			CE04KW1A471M	ELECTRO 470UF 10WV		
C74 ,75			CK73FF1E104Z	CHIP C 0.1UF Z		
C76 ,77			CK45FF1H103Z	CERAMIC 0.010UF Z		
C78 ,79			CK73FB1H103K	CHIP C 0.010UF K		
C80 ,81			CF92FV1H104J	MF 0.10UF J		
C82			CC73FSL1H101J	CHIP C 100PF J		
C83 ,84			CE04KW1J100M	ELECTRO 10UF 63WV		
C85 ,86			CC73FSL1H470J	CHIP C 47PF J		
C87 ,88			CK73FB1H103K	CHIP C 0.010UF K		
C89			CE04KW1C102M	ELECTRO 1000UF 16WV		
⚠ C90 ,91			C91-1439-05	FILM 0.01UF 250VAC		
C92			CE04KW1C102M	ELECTRO 1000UF 16WV		
C93			CE04KW1C471M	ELECTRO 470UF 16WV		
C94 ,95			CF92FV1H104J	MF 0.10UF J		
C96			CE04KW1A102M	ELECTRO 1000UF 10WV		
C97			CE04KW1A471M	ELECTRO 470UF 10WV		
C98			CK73FB1H103K	CHIP C 0.010UF K		
C140			CK73FE1C105Z	CHIP C 1.0UF Z		
C141			CC73FSL1H101J	CHIP C 100PF J		
C142			CK73FE1C105Z	CHIP C 1.0UF Z		

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-			H20-0577-04	PROTECTION COVER	M	
-		*	H21-0301-14	PROTECTION SHEET		
-			H25-0232-04	PROTECTION BAG (235X350X0.03)	KPMXE	
-			H25-0397-04	PROTECTION BAG	KPXE	
-			H25-0651-04	PROTECTION BAG (0232 PRINTED)	T	
-			H25-0659-04	PROTECTION BAG (0397 PRINTED)	T	
-		*	H50-0659-04	ITEM CARTON CASE	KPMXE	
-		*	H50-0916-04	ITEM CARTON CASE	T	
631	3I,3J		J02-1095-04	FOOT		
633	1K		J19-3208-05	UNIT HOLDER		
634	3J		J30-0299-04	SPACER		
635	3J	*	J30-0297-04	SPACER		
△ 636	1L		J42-0083-05	POWER CORD BUSHING		
-			J61-0307-05	WIRE BAND		
641	3J		K29-4377-04	KNOB (INPUT,PHONES LEVEL)		
642	2J	*	K29-5710-03	KNOB (SKIP,SEARCH)		
643	2J	*	K29-5711-03	KNOB (STOP,PLAY)		
644	3I	*	K29-5712-04	KNOB (REC LEVEL)		
△ 645	2L	*	L07-0702-15	POWER TRANSFORMER	KP	
△ 645	2L	*	L07-0703-15	POWER TRANSFORMER	M	
△ 645	2L	*	L07-0704-15	POWER TRANSFORMER	XTE	
A			N89-3008-46	BINDING HEAD TAPTITE SCREW		
B			N89-3008-45	BINDING HEAD TAPTITE SCREW		
C			N89-4008-45	BINDING HEAD TAPTITE SCREW		
D			N09-0295-05	HEXAGON HEAD BOLT(M3X8,+)		
E			N82-2608-45	BINDING HEAD TAPTITE SCREW		
F			N09-2896-05	SET SCREW		
G		*	N29-0265-15	PUSH RIVET		
H			N89-3006-46	BINDING HEAD TAPTITE SCREW		
ELECTRIC UNIT (X25-5450-10)						
C1 -3			C90-3214-05	ELECTRO 100UF 6.3WV		
C4			C90-3212-05	ELECTRO 47UF 6.3WV		
C5			C90-3214-05	ELECTRO 100UF 6.3WV		
C6			CK73FB1H122K	CHIP C 1200PF K		
CN5	3D	*	E40-4692-05	FLAT CABLE CONNECTOR(6P)		
CN6	3C	*	E40-4693-05	FLAT CABLE CONNECTOR(18P)		
CN8	3D		E40-4203-05	FLAT CABLE CONNECTOR(23P)		
S1	2C	*	S68-0031-05	PUSH SWITCH (D.TYPE/R.PRO)		
D1			DA204U	DIODE		
Q1			UN4116	DIGITAL TRANSISTOR		
Q2			2SD1963(R,S)	TRANSISTOR		
Q3			2SB1308(Q,R)	TRANSISTOR		
POWER SUPPLY UNIT (X27-1660-XX) DM-B9 : -00, -21 / DM-1001 : -01, -22						
C1 ,2			CF92FV1H102J	MF 1000PF J		
C3 ,4			CE04KW1J100M	ELECTRO 10UF 63WV		
C5 ,6			CC45FSL1H220J	CERAMIC 22PF J		
C7 ,8			CF92FV1H103J	MF 0.01UF J		
C9 ,10			CF92FV1H334J	MF 0.33UF J		
C11 ,12			CK73FF1E104Z	CHIP C 0.1UF Z		
C13 ,14			CE04KW1H100M	ELECTRO 10UF 50WV		
C15 ,16			CE04KW1A101M	ELECTRO 100UF 10WV		
C17 ,18			CF92FV1H101K	MF 100PF K		

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C19 ,20			CF92FV1H912J	MF 9100PF J		
C21 ,22			CF92FV1H113J	MF 0.011UF J	B9	
C21 ,22			CF92FV1H822J	MF 8200PF J	1001	
C23 ,24			CF92FV1H561J	MF 560PF J	1001	
C23 ,24			CF92FV1H821J	MF 820PF J	B9	
C25 ,26			CE04KW1H220M	ELECTRO 22UF 50WV		
C27 ,28			CF92FV1H102J	MF 1000PF J		
C29 ,30			CE04HW1E220M	NP-ELEC 22UF 25WV		
C31 ,32			CE04KW1H4R7M	ELECTRO 4.7UF 50WV		
C33 ,34			CF92FV1H561J	MF 560PF J		
C35 ,36			CC73FSL1H102J	CHIP C 1000PF J		
C37 ,38			CE04KW1H100M	ELECTRO 10UF 50WV		
C39 ,40			CF92FV1H104J	MF 0.10UF J		
C41			CE04KW1H4R7M	ELECTRO 4.7UF 50WV		
C42 -44			CF92FV1H104J	MF 0.10UF J		
C45			CE04KW1H100M	ELECTRO 10UF 50WV		
C46			CE04KW1E101M	ELECTRO 100UF 25WV		
C47 ,48			CK73FF1E104Z	CHIP C 0.1UF Z		
C49			CC73FSL1H102J	CHIP C 1000PF J		
C50			CK73FB1H103K	CHIP C 0.010UF K		
C51			CK73FF1E104Z	CHIP C 0.1UF Z		
C52			CE04KW1H100M	ELECTRO 10UF 50WV		
C53			CF92FV1H104J	MF 0.10UF J		
C54			CE04KW1H100M	ELECTRO 10UF 50WV		
C55			CF92FV1H154J	MF 0.15UF J		
C56			CE04KW1H100M	ELECTRO 10UF 50WV		
C57 ,58			CE04KW1A101M	ELECTRO 100UF 10WV		
C59 ,60			CK73FF1E104Z	CHIP C 0.1UF Z		
C61			CC45FSL1H220J	CERAMIC 22PF J	B9	
C62			CC45FSL1H220J	CERAMIC 22PF J	1001	
C63 ,64			CK73FF1E104Z	CHIP C 0.1UF Z		
C65 -67			CF92FV1H104J	MF 0.10UF J		
C68 ,69			CE04KW1C222M	ELECTRO 2200UF 16WV		
C70			CE04KW1A101M	ELECTRO 100UF 10WV		
C71			CE04KW1H100M	ELECTRO 10UF 50WV		
C72			CE04KW1A471M	ELECTRO 470UF 10WV		
C74 ,75			CK73FF1E104Z	CHIP C 0.1UF Z		
C76 ,77			CK45FF1H103Z	CERAMIC 0.010UF Z		
C78 ,79			CK73FB1H103K	CHIP C 0.010UF K		
C80 ,81			CF92FV1H104J	MF 0.10UF J		
C82			CC73FSL1H101J	CHIP C 100PF J		
C83 ,84			CE04KW1J100M	ELECTRO 10UF 63WV		
C85 ,86			CC73FSL1H470J	CHIP C 47PF J		
C87 ,88			CK73FB1H103K	CHIP C 0.010UF K		
C89			CE04KW1C102M	ELECTRO 1000UF 16WV		
△ C90 ,91			C91-1439-05	FILM 0.01UF 250VAC		
C92			CE04KW1C102M	ELECTRO 1000UF 16WV		
C93			CE04KW1C471M	ELECTRO 470UF 16WV		
C94 ,95			CF92FV1H104J	MF 0.10UF J		
C96			CE04KW1A102M	ELECTRO 1000UF 10WV		
C97			CE04KW1A471M	ELECTRO 470UF 10WV		
C98			CK73FB1H103K	CHIP C 0.010UF K		
C140			CK73EF1C105Z	CHIP C 1.0UF Z		
C141			CC73FSL1H101J	CHIP C 100PF J		
C142			CK73EF1C105Z	CHIP C 1.0UF Z		

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C143			CK73FF1E104Z	CHIP C 0.1UF Z		
C144			C90-3258-05	ELECTRO 10UF 50WV		
C145			CK73EB1H104K	CHIP C 0.10UF K		
C146			C90-3209-05	ELECTRO 10UF 6.3WV		
C147			CK73FF1E104Z	CHIP C 0.1UF Z		
C148-150			CK73EF1C105Z	CHIP C 1.0UF Z		
C151,152			CK73FF1E104Z	CHIP C 0.1UF Z		
C153			CK73FB1H103K	CHIP C 0.010UF K		
C154-157			CC73FSL1H102J	CHIP C 1000PF J		
C158			CK73EB1H104K	CHIP C 0.10UF K		
C159			CK73FF1E104Z	CHIP C 0.1UF Z		
C160			CC73FSL1H101J	CHIP C 100PF J		
C161			CK73FF1E104Z	CHIP C 0.1UF Z		
C162-164			CK73EF1C105Z	CHIP C 1.0UF Z		
C165			CK73FF1E104Z	CHIP C 0.1UF Z		
C166			CK73EF1C105Z	CHIP C 1.0UF Z		
CN4	2H,2L		E40-4197-05	FLAT CABLE CONNECTOR(17pin)		
J1	3F,3J		E11-0220-05	MINIATURE PHONE JACK(PHONES)		
J2	2H,2L	*	E63-0107-05	PHONO JACK (ANALOG I/O)		
L1 ,2		*	L79-1216-05	LINE FILTER		
△ L3			L79-0733-05	LINE FILTER		
L4 -6		*	L79-1211-05	LINE FILTER		
L7		*	L79-1216-05	LINE FILTER		
X1			L78-0267-05	RESONATOR (4.194MHz)		
VR1	2G,2K	*	R10-4049-05	POTENTIOMETER(50kx2)(REC LEV)		
VR2	2K	*	R10-4050-05	POTENTIOMETER(50K)(PHONES LEV)	B9	
VR3	2F	*	R10-4050-05	POTENTIOMETER(50K)(PHONES LEV)	1001	
△ S1	1H,1L		S62-0001-05	SLIDE SWITCH(VOLTAGE SELECTOR)	M	
S2	2K	*	S60-0022-05	ROTARY SWITCH(INPUT OPT/ANA)	B9	
S3	2K	*	S60-0022-05	ROTARY SWITCH(INPUT OPT/ANA)	1001	
S4 -19	2G,2I		S70-0815-05	TACT SWITCH (PLAY,STOP etc.)		
S20	2E,2I		S62-0036-05	SLIDE SWITCH(TIMER REC/PLAY)		
△ D1 -4		*	U1BC44	DIODE		
D7			DTZ5.1(B)	ZENER DIODE		
D8 -11			DTZ8.2(B)	ZENER DIODE		
△ D12		*	U1BC44	DIODE		
D13			DA204U	DIODE		
D41 ,42			DA204U	DIODE		
D43 -48			MA110	DIODE		
D49			DA204U	DIODE		
D50 ,51			MA110	DIODE		
ED1	2F,2J	*	BJ172GNK	INDICATOR TUBE		
IC1 -5			NJM4565M	IC(OP AMP X2)		
IC6			NJM4558M	IC(OP AMP X2)		
IC7			AKS339-VS	IC(A/D CONVERTER)		
IC7		*	CS5339-KS	IC(A/D CONVERTER)		
IC8		*	SMS840ES	IC(DIGITAL FILTER)		
IC9		*	PCM69AU	IC(D/A CONVERTER)		
IC10			TC7S04F	IC(2CH NAND GATE)		
△ IC12			LM2940CT-5.0	IC(VOLTAGE REGULATOR/ +5V)		
△ IC13			TA79005S	IC(VOLTAGE REGULATOR/ -5V)		
△ IC13			UPC7905HF	IC(VOLTAGE REGULATOR/ -5V)		
IC26		*	LC75710E	IC(DISPLAY DRIVER)		

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B9=DM-B9
1001=DM-1001

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名/規格	Destination 仕向	Remarks 備考
IC27		*	W05-0475-00	IC(MICROPROCESSOR)		
Q1 -4			2SC2878(B)	TRANSISTOR		
Q5 -8			DTC113ZS	DIGITAL TRANSISTOR		
			UN4219	DIGITAL TRANSISTOR		
△ Q9			2SD2012	TRANSISTOR		
△ Q9			2SD2061	TRANSISTOR		
△ Q10			2SB1370	TRANSISTOR		
△ Q10			2SB1375	TRANSISTOR		
Q11			DTA124EU	DIGITAL TRANSISTOR		
Q11		*	UN5112	DIGITAL TRANSISTOR		
Q12			2SC4081(R,S)	TRANSISTOR		
A1	2F,2J		W02-1129-05	ELECTRIC CIRCUIT MODULE		
PROCESSOR UNIT (X32-2540-11)						
C1 ,2			CK73FB1H102K	CHIP C 1000PF K		
C3 ,4			CC73FSL1H101K	CHIP C 100PF K		
C5			CK73FB1H102K	CHIP C 1000PF K		
C6			CK73FB1E473K	CHIP C 0.047UF K		
C7			CE04HW1H3R3M	NP-ELEC 3.3UF 50WV		
C8			CK73FB1H102K	CHIP C 1000PF K		
C9			CK73FB1H223K	CHIP C 0.022UF K		
C10 ,11			CC73FSL1H101J	CHIP C 100PF J		
C12			CK73FF1E104Z	CHIP C 0.1UF Z		
C13			C90-3216-05	ELECTRO 330UF 6.3WV		
C14 -16			CK73FF1E104Z	CHIP C 0.1UF Z		
C17			CK73FB1H272K	CHIP C 2700PF K		
C18			C90-3224-05	ELECTRO 4.7UF 16WV		
C19			CK73FB1E333K	CHIP C 0.033UF K		
C20			C90-3253-05	ELECTRO 1UF 50WV		
C21			CK73FF1E104Z	CHIP C 0.1UF Z		
C22			CK73FB1H682K	CHIP C 6800PF K		
C23			CK73FB1H102K	CHIP C 1000PF K		
C24			C90-3216-05	ELECTRO 330UF 6.3WV		
C25 -28			CK73FB1H103K	CHIP C 0.010UF K		
C29			C90-3214-05	ELECTRO 100UF 6.3WV		
C30 ,31			C90-3212-05	ELECTRO 47UF 6.3WV		
C32			CK73FB1H103K	CHIP C 0.010UF K		
C33			CK73FB1H472K	CHIP C 4700PF K		
C34			CK73FB1H103K	CHIP C 0.010UF K		
C35			CC73FSL1H120J	CHIP C 12PF J		
C36			CK73FB1E473K	CHIP C 0.047UF K		
C37			CK73FB1H103K	CHIP C 0.010UF K		
C38			CK73FB1H222K	CHIP C 2200PF K		
C39			CF92FV1H104J	MF 0.10UF J		
C40			CK73FF1E104Z	CHIP C 0.1UF Z		
C41			CK73FB1E333K	CHIP C 0.033UF K		
C42			CC73FSL1H470J	CHIP C 47PF J		
C43			CE04HW1A220M	NP-ELEC 22UF 10WV		
C44			CK73FF1E104Z	CHIP C 0.1UF Z		
C45			CC73FSL1H101J	CHIP C 100PF J		
C46			CE04HW1A470M	NP-ELEC 47UF 10WV		
C47			CF92FV1H224J	MF 0.22UF J		
C48			CC73FSL1H221J	CHIP C 220PF J		
C49			CK73FB1H103K	CHIP C 0.010UF K		

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C50			CK73FB1H102K	CHIP C 1000PF K		
C51 ,52			CK73FB1H103K	CHIP C 0.010UF K		
C53			C90-3210-05	ELECTR⊕ 22UF 6.3WV		
C54			CK73PB1E333K	CHIP C 0.033UF K		
C55			CF92FV1H474J	MF 0.47UF J		
C56 ,57			C90-3214-05	ELECTR⊕ 100UF 6.3WV		
C58 ,59			CK73FB1H472K	CHIP C 4700PF K		
C60			CF92FV1H474J	MF 0.47UF J		
C61			CK73FB1H222K	CHIP C 2200PF K		
C62			CK73FB1H103K	CHIP C 0.010UF K		
C63 -67			CE04HW1E100M	NP-ELEC 10UF 25WV		
C68 ,69			C90-3228-05	ELECTR⊕ 47UF 16WV		
C70			CK73FB1H103K	CHIP C 0.010UF K		
C71			CF92FV1H474J	MF 0.47UF J		
C72			CK73FB1E273K	CHIP C 0.027UF K		
C73 ,74			C90-3212-05	ELECTR⊕ 47UF 6.3WV		
C75 ,76			CC73FSL1H100D	CHIP C 10PF D		
C77			CK73FB1H102K	CHIP C 1000PF K		
C78			CK73FB1E333K	CHIP C 0.033UF K		
C79			CC73FSL1H221J	CHIP C 220PF J		
C80			CK73FF1E104Z	CHIP C 0.1UF Z		
C81			CK73FB1H103K	CHIP C 0.010UF K		
C82			CC73FSL1H100D	CHIP C 10PF D		
C83			CC73FSL1H150J	CHIP C 15PF J		
C84			CC73FSL1H470J	CHIP C 47PF J		
C85			CC73FSL1H220J	CHIP C 22PF J		
C86			CK73FB1H103K	CHIP C 0.010UF K		
C87 ,88			C90-3212-05	ELECTR⊕ 47UF 6.3WV		
C89			CK73FB1H103K	CHIP C 0.010UF K		
C90			C90-3214-05	ELECTR⊕ 100UF 6.3WV		
C91 -93			CK73FB1H103K	CHIP C 0.010UF K		
C94			CK73FF1E104Z	CHIP C 0.1UF Z		
C95			CK73EF1C105Z	CHIP C 1.0UF Z		
C96 -98			CK73FB1H103K	CHIP C 0.010UF K		
C99			CK73EF1C105Z	CHIP C 1.0UF Z		
C100,101			CK73FF1E104Z	CHIP C 0.1UF Z		
C102,103			CC73FSL1H101J	CHIP C 100PF J		
C105			C90-3212-05	ELECTR⊕ 47UF 6.3WV		
C106			CK73FF1E104Z	CHIP C 0.1UF Z		
C107			CE04KW1C332M	ELECTR⊕ 3300UF 16WV		
C108			C90-3217-05	ELECTR⊕ 10UF 10WV		
C109			C90-3212-05	ELECTR⊕ 47UF 6.3WV		
C111		*	C90-3542-05	ELECTR⊕ 1F 5.5WV		
C112			CF92FV1H104J	MF 0.10UF J		
C113			C90-3212-05	ELECTR⊕ 47UF 6.3WV		
C114			CF92FV1H334J	MF 0.33UF J		
C116,117			CE04KW1H470M	ELECTR⊕ 47UF 50WV		
C118-120			CK73FF1E104Z	CHIP C 0.1UF Z		
C121,122			CK73FB1H103K	CHIP C 0.010UF K		
C123,124			CE04DW1C222M	ELECTR⊕ 2200UF 16WV		
C126			CC73FSL1H331J	CHIP C 330PF J		
C127			CE04KW1C332M	ELECTR⊕ 3300UF 16WV		
C128			CK73FB1H103K	CHIP C 0.010UF K		
C129			CE04KW1A101M	ELECTR⊕ 100UF 10WV		
C130			CE04KW1V100M	ELECTR⊕ 10UF 35WV		

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C131			CE04KW1A101M	ELECTR⊕ 100UF 10WV		
C132			CK73FF1E104Z	CHIP C 0.1UF Z		
C133,134			CC73FSL1H101J	CHIP C 100PF J		
C135			CK73FB1H103K	CHIP C 0.010UF K		
C136-139			CC73FSL1H220J	CHIP C 22PF J		
C140			CC73FSL1H101J	CHIP C 100PF J		
C141			CE04KW1C470M	ELECTR⊕ 47UF 16WV		
C142			CK73FB1H102K	CHIP C 1000PF K		
C143			CC73FSL1H050C	CHIP C 5PF C		
C144,145			CK73EF1C105Z	CHIP C 1.0UF Z		
CN6	2G,2K		E40-4157-05	FLAT CABLE CONNECTOR(17pin)		
CN9	2G,2K		E40-4163-05	FLAT CABLE CONNECTOR(23pin)		
J1	1H,1L		E08-0311-05	RECTANGULAR RECEPTACLE(S.CONT)		
⚠ F1			F04-2025-05	FUSE (UL) (250V 2A)	KP	
⚠ F1			F06-2021-05	FUSE (SEMKO) (250V T2A)	MXTE	
CN15,16			J13-0075-05	FUSE CLIP		
L1		*	L39-1324-05	VARIABLE INDUCTOR<DIG IN PLL>		
L2 ,3			L40-1011-16	SMALL FIXED INDUCTOR(100UH,K)		
L4 ,5		*	L33-0378-05	CHOKE COIL (220UH)		
L6		*	L79-1211-05	LINE FILTER		
L7		*	L79-1216-05	LINE FILTER		
L8 ,9			L92-0131-05	FERRITE CORE		
X1			L77-1124-05	CRYSTAL RESONATOR(22.5792MHz)		
X2		*	L77-2123-05	CRYSTAL RESONATOR(55.0MHz)		
X3		*	L78-0284-05	RESONATOR (5MHz)		
R109,110			RS14KB3A181J	FL-PROOF RS 180 J 1W		
R111			RS14KB3A391J	FL-PROOF RS 390 J 1W		
R115,116			RS14KB3D181J	FL-PROOF RS 180 J 2W		
VR1			R12-1617-05	TRIMMING POT(2.2K)<APC>		
VR2			R12-0606-05	TRIMMING POT(330)<TEMP>		
VR3			R12-1618-05	TRIMMING POT(3.3K)<FOKOFSET>		
VR4			R12-1617-05	TRIMMING POT(2.2K)<FOFST.PITOF		
VR5			R12-1616-05	TRIMMING POT(1K)<PIT OF>		
VR6			R12-1616-05	TRIMMING POT(4.7K)<PIT T.B>		
VR7 ,8			R12-1619-05	TRIMMING POT(4.7K)<GRV T.B>		
VR9			R12-1617-05	TRIMMING POT(2.2K)<F BIAS>		
VR10,11			R12-3685-05	TRIMMING POT(10K)<F,T GAIN>		
VR12			R12-3686-05	TRIMMING POT(22K)<HD DRV PWR>		
K1		*	S76-0033-05	MAGNETIC RELAY		
D2 -4			MA110	DIODE		
D5			1SV147	VARIABLE CAPACITANCE DIODE		
D6 ,7			MA110	DIODE		
D8		*	MA113	DIODE		
⚠ D9		*	U1BC44	DIODE		
D10			DTZ5.1(B)	ZENER DIODE		
D12		*	U1BC44	DIODE		
⚠ D14		*	U1BC44	DIODE		
D15 ,16		*	DTZ15(B)	ZENER DIODE		
D17			DTZ5.1(B)	ZENER DIODE		
⚠ D18			D3SBA20F03	DIODE		
D19		*	U1BC44	DIODE		
D20		*	DTZ6.8(B)	ZENER DIODE		

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⚠ D21 -24		*	U1BC44	DIODE		
D25 ,26			MA110	DIODE		
IC1			CXA1381Q	IC(RF MATRIX AMP)		
IC2			TC74HC4053AF	IC(ANALOG SWITCH)		
IC3			CXA1380M	IC(ADIP DEMODULATOR)		
IC4			CXA1082BQ	IC(SERVO SIGNAL PROCESSOR)		
IC5			TA8410AK	IC(POWER OP AMP)		
IC6			CXD2525Q	IC(ENCORDER/DECORDER)		
IC7			S-80740AL-A4	IC(OP AMP)		
IC8			CXD2526Q	IC(MEMORY CONTROLLER)		
IC9		*	HM514400BLS-8	IC(4Mbit DRAM)		
IC10,11		*	CXD2527R	IC(ATRAC ENCODER/DECODER)		
IC12			TC74HC4053AF	IC(ANALOG SWITCH)		
IC13		*	W05-0474-00	IC(MICROPROCESSOR)		
IC14			TC74HC14AF	IC(SCHMITT INVERTER)		
IC15		*	HM62256ALFP-12T	IC(256kbit SRAM)		
IC16		*	TC74HC373AF	IC(8 bit LATCH)		
IC17			PST529F	IC(SYSTEM RESET)		
IC18			TA8410AK	IC(POWER OP AMP)		
IC19		*	M6200SL	IC(SYSTEM RESET)		
IC20			TL431CLP	IC(REGULATOR)		
IC21			TC74HC02AF	IC(NOR GATE)		
Q1			DTA124ES	DIGITAL TRANSISTOR		
Q1			UN4112	DIGITAL TRANSISTOR		
Q2			DTC124ES	DIGITAL TRANSISTOR		
Q2			UN4212	DIGITAL TRANSISTOR		
Q3			2SD882	TRANSISTOR		
Q4			2SB772	TRANSISTOR		
Q5			2SC1923(R,O)	TRANSISTOR		
Q6			2SC3246	TRANSISTOR		
⚠ Q7			2SD2012	TRANSISTOR		
⚠ Q8			2SB1375	TRANSISTOR		
⚠ Q9			2SC2458(Y,GR)	TRANSISTOR		
⚠ Q9			2SC3311A(Q,R)	TRANSISTOR		
⚠ Q10 ,11		*	IRF610	FET		
⚠ Q12			2SD1944	TRANSISTOR		
Q13			2SK163(L)	FET		
Q14			DTC124ES	DIGITAL TRANSISTOR		
Q14			UN4212	DIGITAL TRANSISTOR		
Q15			2SA1534A(R,S)	TRANSISTOR		
Q16 ,17			2SK208(Y,GR)	TRANSISTOR		
⚠ Q18			2SA1036K(Q,R)	TRANSISTOR		
A1	2H,2L	*	W02-1181-05	OPTIC RECEIVING MODULE(OPT IN)		
A2	2H,2L		W02-1114-05	OSCILLATING MODULE(OPT OUT)		
MECHANISM ASS'Y (X92-1880-10)						
1	3B	*	B09-0242-04	CAP		
2	1B	*	D10-3380-03	SLIDER ASSY		
3	1B	*	D10-3382-03	SLIDER ASSY		
4	2A	*	D10-3385-03	SLIDER		
5	1B	*	D10-3386-04	ROD		
6	2B	*	D10-3387-04	ARM		
7	1D	*	D10-3388-03	LEVER		
8	3C	*	D10-3389-04	ROD		

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9	1D	*	D10-3390-03	LEVER		
10	1C	*	D10-3391-04	ARM ASSY		
11	1D	*	D10-3393-03	ARM		
12	1D	*	D10-3420-04	ARM ASSY		
15	3A		D13-0976-03	GEAR		
16	3A		D13-0978-03	GEAR		
17	1A	*	D13-1542-04	GEAR		
18	3A	*	D13-1543-04	GEAR		
19	3A	*	D13-1544-04	GEAR		
20	3A	*	D13-1545-04	GEAR		
21	2C	*	D13-1546-08	GEAR		
22	2C	*	D13-1547-08	GEAR		
23	3C	*	D13-1548-08	GEAR ASSY		
25	3D	*	D13-1550-13	LACK (GEAR)		
26	3A		D15-0292-08	PULLEY		
27	3A	*	D15-0351-04	PULLEY		
28	3A	*	D16-0352-05	BELT		
29	1D	*	D21-1728-04	SHAFT		
30	1A	*	D23-0295-03	RETAINER		
31	2A	*	D23-0296-03	RETAINER		
32	3A	*	D40-1312-03	DRIVE MECHANISM ASSY		
35	2A	*	G01-3582-04	EXTENSION SPRING		
36	1D	*	G01-3583-04	TORSION COIL SPRING		
37	1D	*	G01-3584-04	TORSION COIL SPRING		
38	1C,1D	*	G01-3585-04	TORSION COIL SPRING		
39	1D	*	G01-3586-04	TORSION COIL SPRING		
40	3B	*	G01-3611-04	COMPRESSION SPRING		
45	2A		G11-2055-04	CUSHION		
46	2A,2B	*	G11-2164-04	CUSHION (2X3,L3)		
47	3B	*	J02-1093-08	INSULATOR		
50	1C	*	J19-3589-02	HOLDER ASSY		
50	2D,3C		J21-5926-04	MOUNTING HARDWARE		
55	2A	*	J90-0802-04	GUIDE		
56	2A	*	J90-0803-04	GUIDE		
57	3A	*	J90-0805-03	GUIDE		
58	2A	*	J90-0806-04	GUIDE		
60	1A	*	J99-0530-01	TRAY		
61	1D	*	J21-6017-04	MOUNTING HARDWARE ASSY		
62	2C	*	N09-3031-05	MACHINE SCREW (M2X2.5)		
63	2B,3A		N19-0891-04	FLAT WASHER		
64	3A		N19-1105-04	FLAT WASHER		
65	1C,1D		N19-1171-04	FLAT WASHER		
66	3A	*	N09-3040-05	SEMS (MACHINE SCREW)(M2X3)		
67	2C,3C		N35-2004-46	BINDING HEAD MACHINE SCREW		
68	2D		N35-2006-46	BINDING HEAD MACHINE SCREW		
69	2D,3C		N35-2603-46	BINDING HEAD MACHINE SCREW		
70	3B,3C		N35-2605-46	BINDING HEAD MACHINE SCREW		
71	3D	*	N38-1440-46	PAN HEAD MACHINE SCREW		
73	1D		N79-1740-46	PAN HEAD TAPTITE SCREW		
74	3A	*	N83-2004-45	PAN HEAD TAPTITE SCREW		
75	2A,3A	*	N83-2006-45	PAN HEAD TAPTITE SCREW		
76	1A		N83-2006-46	PAN HEAD TAPTITE SCREW		
77	2A,3B		N83-2008-46	PAN HEAD TAPTITE SCREW		

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⚠ D21 -24		*	U1BC44	DI0DE		
D25 ,26			MA110	DI0DE		
IC1			CXA1381Q	IC(RF MATRIX AMP)		
IC2			TC74HC4053AF	IC(ANALOG SWITCH)		
IC3			CXA1380M	IC(ADIP DEMODULATOR)		
IC4			CXA1082BQ	IC(SERVO SIGNAL PROCESSOR)		
IC5			TA8410AK	IC(POWER OP AMP)		
IC6			CXD2525Q	IC(ENCORDER/DECORDER)		
IC7			S-80740AL-A4	IC(OP AMP)		
IC8			CXD2526Q	IC(MEMORY CONTROLLER)		
IC9		*	HM514400BLS-8	IC(4Mbit DRAM)		
IC10,11		*	CXD2527R	IC(ATRAC ENCODER/DECODER)		
IC12			TC74HC4053AF	IC(ANALOG SWITCH)		
IC13		*	W05-0474-00	IC(MICROPROCESSOR)		
IC14			TC74HC14AF	IC(SCHMITT INVERTER)		
IC15		*	HM62256ALFP-12T	IC(256kbit SRAM)		
IC16		*	TC74HC373AF	IC(8 bit LATCH)		
IC17			PST529F	IC(SYSTEM RESET)		
IC18			TA8410AK	IC(POWER OP AMP)		
IC19		*	M62005L	IC(SYSTEM RESET)		
IC20			TL431CLP	IC(REGULATOR)		
IC21			TC74HC02AF	IC(NOR GATE)		
Q1			DTA124ES	DIGITAL TRANSISTOR		
Q1			UN4112	DIGITAL TRANSISTOR		
Q2			DTC124ES	DIGITAL TRANSISTOR		
Q2			UN4212	DIGITAL TRANSISTOR		
Q3			2SD882	TRANSISTOR		
Q4			2SB772	TRANSISTOR		
Q5			2SC1923(R,O)	TRANSISTOR		
Q6			2SC3246	TRANSISTOR		
⚠ Q7			2SD2012	TRANSISTOR		
⚠ Q8			2SB1375	TRANSISTOR		
⚠ Q9			2SC2458(Y,GR)	TRANSISTOR		
⚠ Q9			2SC3311A(Q,R)	TRANSISTOR		
⚠ Q10 ,11		*	IRF610	FET		
⚠ Q12			2SD1944	TRANSISTOR		
Q13			2SK163(L)	FET		
Q14			DTC124ES	DIGITAL TRANSISTOR		
Q14			UN4212	DIGITAL TRANSISTOR		
Q15			2SA1534A(R,S)	TRANSISTOR		
Q16 ,17			2SK208(Y,GR)	TRANSISTOR		
⚠ Q18			2SA1036K(Q,R)	TRANSISTOR		
A1	2H,2L	*	W02-1181-05	OPTIC RECEIVING MODULE(OPT IN)		
A2	2H,2L		W02-1114-05	OSCILLATING MODULE(OPT OUT)		
MECHANISM ASS'Y (X92-1880-10)						
1	3B	*	B09-0242-04	CAP		
2	1B	*	D10-3380-03	SLIDER ASSY		
3	1B	*	D10-3382-03	SLIDER ASSY		
4	2A	*	D10-3385-03	SLIDER		
5	1B	*	D10-3386-04	ROD		
6	2B	*	D10-3387-04	ARM		
7	1D	*	D10-3388-03	LEVER		
8	3C	*	D10-3389-04	ROD		

L:Scandinavia K:USA P:Canada R:Mexico
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Y:AAFES (Europe) X:Australia M:Other Areas

⚠ indicates safety critical components.

※ New Parts
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Teile ohne Parts No. werden nicht geliefert.

⑩

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
9	1D	*	D10-3390-03	LEVER		
10	1C	*	D10-3391-04	ARM ASSY		
11	1D	*	D10-3393-03	ARM		
12	1D	*	D10-3420-04	ARM ASSY		
15	3A		D13-0976-03	GEAR		
16	3A		D13-0978-03	GEAR		
17	1A	*	D13-1542-04	GEAR		
18	3A	*	D13-1543-04	GEAR		
19	3A	*	D13-1544-04	GEAR		
20	3A	*	D13-1545-04	GEAR		
21	2C	*	D13-1546-08	GEAR		
22	2C	*	D13-1547-08	GEAR		
23	3C	*	D13-1548-08	GEAR ASSY		
25	3D	*	D13-1550-13	LACK (GEAR)		
26	3A		D15-0292-08	PULLEY		
27	3A	*	D15-0351-04	PULLEY		
28	3A	*	D16-0352-05	BELT		
29	1D	*	D21-1728-04	SHAFT		
30	1A	*	D23-0295-03	RETAINER		
31	2A	*	D23-0296-03	RETAINER		
32	3A	*	D40-1312-03	DRIVE MECHANISM ASSY		
35	2A	*	G01-3582-04	EXTENSION SPRING		
36	1D	*	G01-3583-04	TORSION COIL SPRING		
37	1D	*	G01-3584-04	TORSION COIL SPRING		
38	1C,1D	*	G01-3585-04	TORSION COIL SPRING		
39	1D	*	G01-3586-04	TORSION COIL SPRING		
40	3B	*	G01-3611-04	COMPRESSION SPRING		
45	2A		G11-2055-04	CUSHION		
46	2A,2B	*	G11-2164-04	CUSHION (2X3,L3)		
47	3B	*	J02-1093-08	INSULATOR		
50	1C	*	J19-3589-02	HOLDER ASSY		
50	2D,3C		J21-5926-04	MOUNTING HARDWARE		
55	2A	*	J90-0802-04	GUIDE		
56	2A	*	J90-0803-04	GUIDE		
57	3A	*	J90-0805-03	GUIDE		
58	2A	*	J90-0806-04	GUIDE		
60	1A	*	J99-0530-01	TRAY		
61	1D	*	J21-6017-04	MOUNTING HARDWARE ASSY		
62	2C	*	N09-3031-05	MACHINE SCREW (M2X2.5)		
63	2B,3A		N19-0891-04	FLAT WASHER		
64	3A		N19-1105-04	FLAT WASHER		
65	1C,1D		N19-1171-04	FLAT WASHER		
66	3A	*	N09-3040-05	SEMS (MACHINE SCREW)(M2X3)		
67	2C,3C		N35-2004-46	BINDING HEAD MACHINE SCREW		
68	2D		N35-2006-46	BINDING HEAD MACHINE SCREW		
69	2D,3C		N35-2603-46	BINDING HEAD MACHINE SCREW		
70	3B,3C		N35-2605-46	BINDING HEAD MACHINE SCREW		
71	3D	*	N38-1440-46	PAN HEAD MACHINE SCREW		
73	1D		N79-1740-46	PAN HEAD TAPTITE SCREW		
74	3A	*	N83-2004-45	PAN HEAD TAPTITE SCREW		
75	2A,3A	*	N83-2006-45	PAN HEAD TAPTITE SCREW		
76	1A		N83-2006-46	PAN HEAD TAPTITE SCREW		
77	2A,3B		N83-2008-46	PAN HEAD TAPTITE SCREW		

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⚠ indicates safety critical components.

DM-1001/B9 PARTS LIST

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⑪

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
78	2A,2B		N83-2608-46	PAN HEAD TAPTITE SCREW		
79	1D		N39-1740-46	PAN HEAD SCREW		
80	2D		S33-1022-05	PUSH SWITCH (SLT)		
81	2A,3B		S40-1112-05	PUSH SWITCH (OPEN,CLOSE)		
82	3C	*	T99-0539-05	MAGNET		
DM	3C	*	T42-0647-08	DISC MOTOR ASSY		
FM	2C	*	T42-0637-05	FEED MOTOR		
LM	3B		T42-0620-05	LOADING MOTOR		
PU	3D	*	T25-0029-05	OPTICAL PICKUP HEAD(KMS-130B)		
RH	1D	*	T30-0010-05	RECORD HEAD (RF320-74V)		

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⚠ indicates safety critical components.

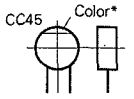
DM-1001/B9 PARTS LIST

PARTS LIST

CAPACITORS

CC 45 TH 1H 220 J
1 2 3 4 5 6

1 = Type ... ceramic, electrolytic, etc.
2 = Shape ... round, square, ect.
3 = Temp. coefficient
4 = Voltage rating
5 = Value
6 = Tolerance



• Capacitor value

010 = 1pF
100 = 10pF
101 = 100pF
102 = 1000pF = 0.001μF
103 = 0.01μF

2 2 0 = 22pF
0 = Multiplier
2 = 2nd number
2 = 1st number

• Temperature coefficient

1st Word	C	L	P	R	S	T	U
Color*	Black	Red	Orange	Yellow	Green	Blue	Violet
ppm/°C	0	–80	–150	–220	–330	–470	–750

2nd Word	G	H	J	K	L
ppm/°C	±30	±60	±120	±250	±500

Example : CC45TH = –470 ± 60ppm/°C

• Tolerance (More than 10pF)

Code	C	D	G	J	K	M	X	Z	P	No code
(%)	±0.25	±0.5	±2	±5	±10	±20	+40 –20	+80 –20	+100 –0	More than 10μF – 10 ~ +50 Less than 4.7μF –10 ~ +75

(Less than 10pF)

Code	B	C	D	F	G
(pF)	±0.1	±0.25	±0.5	±1	±2

• Voltage rating

1st word \ 2nd word	A	B	C	D	E	F	G	H	J	K	V
0	1.0	1.25	1.6	2.0	2.5	3.15	4.0	5.0	6.3	8.0	–
1	10	12.5	16	20	25	31.5	40	50	63	80	35
2	100	125	160	200	250	315	400	500	630	800	–
3	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	–

• Chip capacitors

(EX) C C 7 3 F S L 1 H 0 0 0 J
1 2 3 4 5 6 7
(Chip) (CH, RH, UJ, SL)

(EX) C K 7 3 F F 1 H 0 0 0 Z
1 2 3 4 5 6 7
(Chip) (B, F)

Refer to the table above.
1 = Type
2 = Shape
3 = Dimension
4 = Temp. coefficient
5 = Voltage rating
6 = Value
7 = Tolerance

Dimension (Chip capacitors)

Dimension code	L	W	T
Empty	5.6 ± 0.5	5.0 ± 0.5	Less than 2.0
A	4.5 ± 0.5	3.2 ± 0.4	Less than 2.0
B	4.5 ± 0.5	2.0 ± 0.3	Less than 2.0
C	4.5 ± 0.5	1.25 ± 0.2	Less than 1.25
D	3.2 ± 0.4	2.5 ± 0.3	Less than 1.5
E	3.2 ± 0.2	1.6 ± 0.2	Less than 1.25
F	2.0 ± 0.3	1.25 ± 0.2	Less than 1.25
G	1.6 ± 0.2	0.8 ± 0.2	Less than 1.0

RESISTORS

• Chip resistor (Carbon)

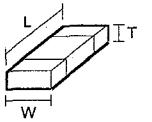
(EX) R K 7 3 E B 2 B 0 0 0 J
1 2 3 4 5 6 7
(Chip) (B,F)

• Carbon resistor (Normal type)

(EX) R D 1 4 B B 2 C 0 0 0 J
1 2 3 4 5 6 7

1 = Type
2 = Shape
3 = Dimension
4 = Temp. coefficient
5 = Rating wattage
6 = Value
7 = Tolerance

Dimension



Dimension (Chip resistor)

Dimension code	L	W	T
E	3.2 ± 0.2	1.6 ± 0.2	1.0
F	2.0 ± 0.3	1.25 ± 0.2	1.0
G	1.6±0.2	0.8±0.2	0.5±0.1

Rating wattage

Code	Wattage	Code	Wattage	Code	Wattage
1J	1/16W	2C	1/6W	3A	1W
2A	1/10W	2E	1/4W	3D	2W
2B	1/8W	2H	1/2W		

DM-1001/B9

SPECIFICATIONS

System ..... Mini Disc digital audio system
Laser ..... Semiconductor laser
Recording method ..... Field modulation overwrite method
Sampling frequency 44.1kHz
Playing rotation ..... Approx. 400rpm~900rpm (CLV)
Audio compression ..... ATRAC (Adaptive TRansform Acoustic Coding)

Output level / Impedance ..... 1.2V/3.3kΩ : DM-B9, 2.0V/1kΩ : DM-1001
Digital output
Optical ..... –15dBm~–21dBm (Wave length 660nm)
Headphone output (16Ω) ..... 6.0mW : DM-B9, 6.4mW : DM-1001
Input sensitivity / Impedance ..... 300mV/22kΩ or more : DM-B9, 500mV/22kΩ or more : DM-1001

GENERAL

Power consumption 35W
Dimensions
DM-B9 ..... W : 270mm (10-5/8") x H : 70mm (2-3/4") x D : 322mm (12-11/16")
DM-1001 ..... W : 270mm (10-5/8") x H : 83mm (3-1/4") x D : 324mm (12-3/4")
Weight (Net) ..... 4.4kg (9.7lb) : DM-B9, 4.7kg (10.3lb) : DM-1001

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Note :
Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the U.S.A. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

KENWOOD CORPORATION
Alive Mitake, 2-5, 1-chome Shibuya, Shibuya-ku, Tokyo 150, Japan
KENWOOD SERVICE CORPORATION
P.O. BOX 22745, 2201 East Dominguez St., Long Beach, CA 90810-5745, U.S.A.
KENWOOD ELECTRONICS CANADA INC.
6070 Kestrel Road, Mississauga, Ontario, Canada L5T 1S8
KENWOOD ELECTRONICS LATIN AMERICA S.A.
P.O. BOX 55-2791, Piso 6 Plaza Chase, Cl. 47 y Aquilino de la Guardia, Panama, Republic de Panama
TRIO-KENWOOD U.K. LIMITED
KENWOOD House, Dwight Road, Watford, Herts., WD1 8EB United Kingdom
KENWOOD ELECTRONICS BENELUX N.V.
Mechelsesteenweg 418 B-1930 Zaventem, Belgium
KENWOOD ELECTRONICS DEUTSCHLAND GMBH
Rembrücker-Str. 15, 63150 Heusenstamm, Germany
TRIO-KENWOOD FRANCE S.A.
13 Boulevard Ney, 75018 Paris, France
KENWOOD ELECTRONICS ITALIA S.p.A.
Via G. Sirtori, 7/9 20129 Milano, Italy
KENWOOD ESPAÑA S.A.
Bolivia, 239-08020 Barcelona, Spain
KENWOOD ELECTRONICS AUSTRALIA PTY. LTD. (A.C.N. 001 499 074)
P.O. BOX 504, 8 Figtreel Drive, Australia Centre, Homebush, N.S.W. 2140, Australia
KENWOOD & LEE ELECTRONICS, LTD.
Unit 3712-3724, Level 37 Tower 1, Metroplaza, 223 Hing Fong Road, Kwai Fong N.T. Hong Kong
KENWOOD ELECTRONICS SINGAPORE PTE LTD.
No. 1 Genting Lane #07-00, KENWOOD Building, Singapore, 1334